A TREATISE
ON
MODERN INSTRUMENTATION
AND
ORCHESTRATION.

RLIOZ.

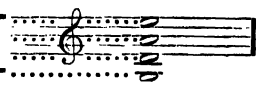
nent of these instruments,—either for
elody, harmony, and rhythm, or for
iar impressions independently of all
e other great musical powers,—consti-
instrumentation.

f this treatise is, first,—the indication
nd of certain essential parts of the
ıstruments; and then, the study of the
, particular *character*, and powers of
aining to each of them; and lastly, the
)wn of proceeding, in order to group
.cly.

ENTS PLAYED WITH A BOW.

THE VIOLIN.

ings of a violin are usually tuned by
and E, thus:—



s are called open when not stopped
the left hand, and are indicated by an
em.

nt composers, in order to give more
instrument, occasionally raise one or
alf a tone, thus keeping the majority
pen; the sonorousness being greater
n when pressed, in keys where they
)ccurred, with the ordinary method of
tuning.

Frequently merely the G is raised a whole tone.

characteristic noises, Triangles. Gongs. Pavillon Chinois.

N1424

Sometimes the G only is lowered half a tone, in order to produce softer and deeper effects.

According to the degree of skill at present attained by violinists, the compass which may be assigned to the violin in a well constituted orchestra is from

G below the staff  to 2nd C above the staff

with all the chromatic intervals.

Great performers exceed this compass by several notes higher; and even in the orchestra, a farther degree of acuteness may be obtained by means of *harmonics*—of which mention will be made hereafter.

Shakes are practicable on all the notes; but the extreme difficulty of those on the three topmost notes—A, B, C, should be avoided; especially in the orchestra

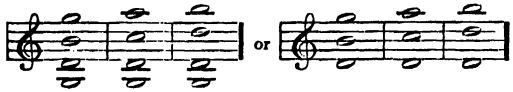
The minor shake on the fourth string, of the G to the A♭, should be avoided as much as possible:—it is harsh and disagreeble.

Chords of two, three, or four notes, which may be *struck*, or *played in arpeggio*, on the violin, are very numerous; and the different effects they produce extremely various.

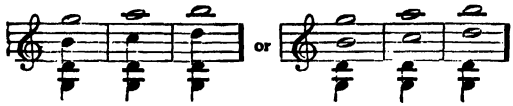
Chords of two notes, resulting from what is called the *double-string*, are well suited to melodious designs, to sustained phrases either *forte* or *piano*, to *accompaniments* of all kinds, and to the *tremolo*.

Chords of three or four notes, produce a bad effect, when played *piano;* they seem rich and energetic only when played loud and boldly; as the bow can then strike the strings sufficiently together to make them vibrate simultaneously.

Of these three or four notes, two at most can be sustained; it is therefore useless, in a slow or measured movement, to write thus:—



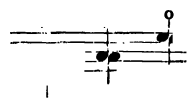
The two upper notes are alone capable of being held; therefore, it is better to indicate the passage in this way:—



All chords contained between the low G and the low D are impossible: since there is only a single string to produce the two notes. When there is need of a harmony in this extreme point of the scale, it can be obtained in the orchestra only by dividing the violins, indicated by the word *divisi*, or *divisés* (divided), and *à deux* (in two), written over the passage:—

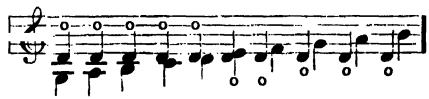
The violins are then separated, that one set may play the high part, and the other the lower. Beginning with D (3rd string) all intervals of a second, a third, a fifth, a sixth, a seventh, an octave, are practicable. But they become more and more difficult in proportion as they advance upon the high strings.

The unison is sometimes employed on a double string; but, besides that it can be done upon many other notes, it is well to limit it to these three, D, A, E; because they are the only ones that offer, with the facility which ensures good execution, a variety of quality in tone, and a force of sonorousness, which result from the circumstance of one of the strings being *open*:—



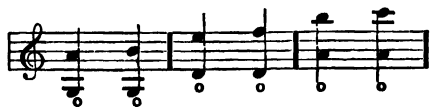
In the other unisons there is no open string, their execution becomes difficult, and strict intonation very rare.

A bass string can cross an upper open string, by pursuing an ascending movement while the open string remains as a pedal:—

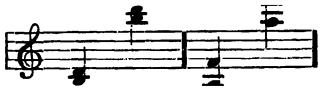


It will be seen that the D, here, remains open, while the ascending scale is executed throughout upon the fourth string.

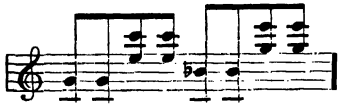
The intervals of a *ninth* and a *tenth* are feasible, but not so easy as the preceding; it is injudicious to write them, for the orchestra, unless the lower string is *open*:—



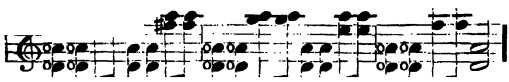
Avoid, as excessively difficult,—not to say impossible,—leaps of a double string, which demand a difficult change of position :—



Such leaps should not be written, unless the two upper notes belong to a chord of four notes which may be struck together :—



In the following example, however, the four notes cannot be struck simultaneously, but with some difficulty (those of the last chord alone excepted) ; and the leap from low to high is not less easy,—the two lower notes being on open strings, and the two others with the first and third fingers :—

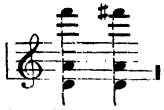


Among chords of three, and particularly of four notes, the best and most sonorous are always those which contain most open strings. If none of these strings can be had, for a chord of four notes, it is better to rest contented with a chord of three notes.

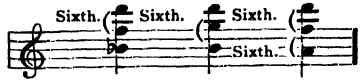
Chords may be executed in arpeggio, from which frequently results the most agreeable effects — in a *pianissimo* especially.

Nevertheless, there are designs, similar to the preceding, of which four notes cannot, without extreme difficulty, be played at once, yet which are easily executed in arpeggio.

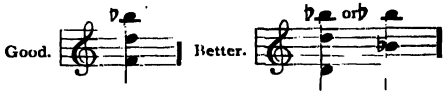
If it be required to strike an isolated chord, in D minor or major, the disposition of letter A should not be employed, being too difficult when not led up to; it is better to take the following, which is quite easy, and more sonorous, on account of the effect of the two open strings :—



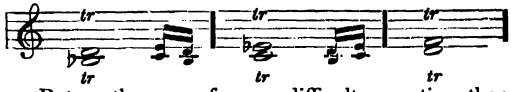
It may be seen by the preceding that all chords of three notes are possible for the violin ; if care be taken, in those which contain no open string, to spread the parts sufficiently to allow an interval of a fifth or sixth between them. The sixth may be found either above or below, or in both at once :—



Certain chords of three notes being practicable in two ways, it is always better to choose that one which contains an open string :—



Double shakes in thirds may be made, beginning with first B♭ below :—



But as they are of more difficult execution than simple shakes, and as the same effect may be obtained more neatly by means of two separate violin-parts, it is better, in general, to abstain from them *in the orchestra.*

The tremolo, simple or double, by many violins, produces several excellent effects ; it expresses trouble, agitation, terror, shades of *piano*, of *mezzo-forte*, and of *fortissimo*, when it is placed on one or two of the three strings, G, D, and A ; and when it is not carried much above the middle B♭ ;

It has something of a stormy, violent character, in the *fortissimo* on the middle of the first or second string ;

It becomes, on the contrary, aerial, angelic, when employed in several parts, and *pianissimo* on the high notes of the first string.

Occasion may here be taken to mention, that the custom is to divide the violins into two sets ; but there is no reason why they should not be subdivided into two or three sets, according to the object which the composer has in view.

To return to the tremolo. The composer must write with precision, keeping in view the nature of the movement itself, in which the *tremolo* occurs.

Thus, in an *Allegro assai*,

In an *Adagio*, it should be written :—

and even sometimes, if the movement is still slower than an *Adagio*:—

The tremolo below and in the middle of the third and of the fourth string, is much more characteristic in *fortissimo*, if the bow strike the strings near the bridge. In large orchestras it produces a sound like that of a rapid and powerful cascade. This mode of execution should be indicated by the words: *near the bridge.*

Advantageous use is sometimes made, for certain dramatic accompaniments of an agitated character, of the *broken tremolo*, sometimes upon one string:—

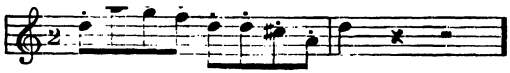
sometimes upon two strings:

Lastly, there is another kind of tremolo, never employed now-a-days; but of which Gluck has made admirable use in his recitatives; and may be entitled the *undulating tremolo.* It consists of a not very rapid utterance of two bound notes on the same tone; while the bow never quits the string.

In these *unmeasured* accompaniments, the performers cannot precisely hit the same number of notes played in each bar,—some playing more, others fewer; and there results from these differences a sort of fluctuation, or indecision in the orchestra, perfectly adapted for rendering the uneasiness and anxiety of certain scenes. Gluck wrote thus:—

The different kinds of *bowing* are of great importance. They should therefore be carefully indicated,—according to the nature of the idea which is to be conveyed—by the following signs:—

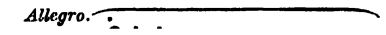
For *detached* notes:—



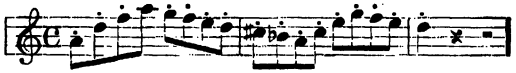
For *slurred* notes, two and two:—

For *extended slurs*:—

For *staccato*, or *lightly detached* notes, simple or double, which are to be executed during a single drawing of the bow, by means of a succession of small jerks advancing as little as possible:—

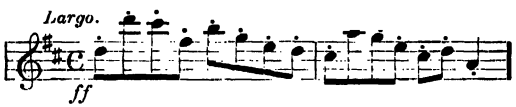


For *markedly detached* notes, which are to give to the string all possible sonorousness, by permitting it to vibrate alone after the bow has vigorously struck it, and which particularly suit pieces of a haughty, grand character, and of moderate movement:—

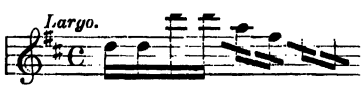


Reiterated notes, two, three, and four times (according to the rapidity of the movement), give more force and agitation to the sound of the violins, and suit many orchestral effects, in all kinds of shades:—

Nevertheless, in a phrase of broad movement and vigorous character, simple notes *markedly detached*, produce a much better effect, when a true tremolo is not employed upon each note. And the following passage:—



would be,—taking into consideration the slowness of the movement—of an incomparably more noble and more powerful sonorousness, than this one:—



Composers might be considered too minute probably, should they indicate the movements of the bow in their score; still, it is well, when a passage demands lightness, extreme energy or amplitude of sound, to indicate the mode of execution by these words:—

"With *the point* of the bow;" or "with *the heel* of the bow;" or "with the *full length* of the bow," written over each note. So the words,—"On the bridge," and "On the finger-board," designating the spot nearer or farther from the bridge, where the bow should strike the strings, the same remarks may apply. Those metallic sounds, slightly rough, which the bow draws forth when near the bridge, differs greatly from those soft veiled sounds which are generated when it is passed across the finger-board.

Harmonics are those sounds which are generated by touching the strings with the fingers of the left hand, so as to divide them in their length, yet not with sufficient pressure to place them in contact with the finger-board, as is the case for ordinary sounds.

These *Harmonics* possess a singular character of mysterious softness; and the extreme acuteness of some of them afford the violin, in the upper part, an immense compass. They are *natural*, or *artificial*.

Natural harmonics are those which are produced by touching certain points of open strings.

Artificial harmonics are to be obtained very distinctly throughout the extent of the gamut, by means of the first finger; which, firmly pressed upon the string, while the other fingers touch it serves for a moveable nut.

The touched octave gives its unison.

This fingering is little used, excepting for the 4th string, on account of its inconvenience.

The touched fifth gives its octave above.

This fingering is easier than the preceding, and less so than the following.

The touched fourth gives its twelfth above.

The touched major third gives its double octave above.

The minor third gives its major seventeenth above.

The touched major sixth gives its twelfth above.

The positions of touched fourth and fifth are undoubtedly the most advantageous.

The harmonics of the fourth string have something of the quality of a flute; they are preferable for delivering a slow air. The harmonics of the other strings acquire more delicacy and tenuity in proportion as they are higher; it is precisely this character, and their crystalline quality which renders them appropriate to chords that may be called fairy-like. However they may have become familiar, now-a-days, to our young violinists, they should never be employed in a lively movement; or, at least, care should be taken not to give them rapid successions of notes, if their perfect execution is to be insured.

It is lawful for a composer to write them in two, three, and even in four parts, according to the number of violin parts. The effect of such chords sustained, is very remarkable, if it be warranted by the subject of the piece, and well mingled with the rest of the orchestration.

Sordines (or *mutes* are little implements which are placed on the bridge of stringed instruments in order to deaden their tone; and to give them at the same time a mournful, mysterious and softened tone, which is frequently applied in all styles of music.

The composer, when introducing the use of sordines in the middle of a piece (indicated by these words "*con sordini*"), should not forget to give the performers time to take them and place them; consequently, he will be careful to arrange a previous rest for the violin parts about equivalent to the duration of two bars in four-time (*moderato*).

A rest of such length is not necessary, when the words "*senza sordini*" indicate they are to be removed. The sudden transition of sounds thus deadened to sounds clear and natural, is often of immense effect.

The *Pizzicato* is in very general use for all stringed instruments. The sounds obtained by vibrating the strings with the finger, produce accompaniments approved by singers, since they do not cover the voice; they do well also for symphonic effects, even in vigorous orchestral sallies, either in the whole band of stringed instruments, or in one or two parts alone.

In a *forte*, it becomes necessary to write it, generally, neither too high nor too low; the extreme upper notes being shrill and wiry, and the deeper ones too du

Pizzicato chords of two, three, and four notes, are equally valuable in a fortissimo. Accompaniments pizzicato *piano*, have always a graceful effect.

It frequently happens, that, in order to give a passage greater energy, the first violins are doubled by the second violins an octave lower; but, if the passage does not lie high, it is better to double them in unison It happens even, that if additional force should be desirable by subjoining the violas an octave below, this weak lower doubling, on account of the disproportionate upper part, produces a futile murmuring, by which the vibrations of the high violin notes are rather obscured than assisted. It is preferable, if the viola part cannot be planned in a prominent manner, to employ it in augmenting the sound of the violoncellos, taking care to put them together (as much as the low com

pass of the instrument will permit) in the unison and not in the octave.

Violins are more brilliant, and play more easily in keys which leave them the use of the open strings. The key of C, alone, appears to form an exception to this rule, on account of its sonorousness, which is evidently less than that of the keys of A and E, although it keeps four open strings, while A keeps but three, and E two only. The quality of the various keys for the violin may be thus characterized; together with their greater or less facility of execution:—

	MAJOR.		MINOR.	
C.	Easy.	Grave; but dull and vague.	C. Easy.	Gloomy; not very sonorous.
C ♯.	Very difficult.	Less vague; and more elegant.	C ♯. Tolerably easy.	Tragic; sonorous; elegant.
D ♭.	Difficult; but less so than the preceding.	Majestic.	D ♭. Very difficult.	Serious; not very sonorous.
D.	Easy.	Gay, noisy, and rather commonplace.	D. Easy.	Lugubrious; sonorous; somewhat commonplace.
D ♯.	Almost impracticable.	Dull.	D ♯. Almost impracticable.	Dull.
E ♭.	Easy.	Majestic; tolerably sonorous; soft; grave.	E ♭. Difficult.	Very vague; and very mournful.
E	Not very difficult.	Brilliant; pompous; noble.	E. Easy.	Screamy; and slightly commonplace.
F ♭.	Impracticable.		F ♭. Impracticable.	
F.	Easy.	Energetic; vigorous.	F. Rather difficult.	Not very sonorous; gloomy violent.
F ♯.	Very difficult.	Brilliant, dashing.	F ♯. Less difficult.	Tragic; sonorous; dashing.
G ♭.	Very difficult.	Less brilliant; more tender.	G ♭. Impracticable.	
G.	Easy.	Rather gay; and slightly commonplace.	G. Easy.	Melancholy; tolerably sonorous; soft.
G ♯.	Nearly impracticable	Dull; but noble.	G ♯. Very difficult.	Not very sonorous; mournful; elegant.
A ♭.	Not very difficult.	Soft; veiled; very noble.	A ♭. Very difficult; almost impracticable.	Very dull, and mournful; but noble.
A.	Easy.	Brilliant; elegant; joyous.	A. Easy.	Tolerably sonorous; soft; mournful; rather noble.
A ♯.	Impracticable.		A ♯. Impracticable.	
B ♭.	Easy.	Noble; but without pomp.	B ♭. Difficult.	Gloomy; dull; hoarse; but noble.
B.	Not very difficult.	Noble; sonorous; radiant.	B. Easy.	Very sonorous; wild; rough; ominous; violent.
C ♭.	Almost impracticable.	Noble; but not very sonorous.	C ♭. Impracticable.	

For the ready reference of composers unfamiliar with the violin we append the following:

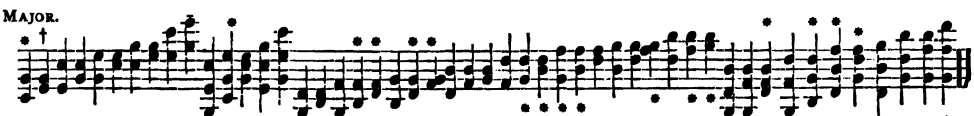
TABLE OF CHORDS FOR THE VIOLIN

IN ALL THE MAJOR AND MINOR KEYS.

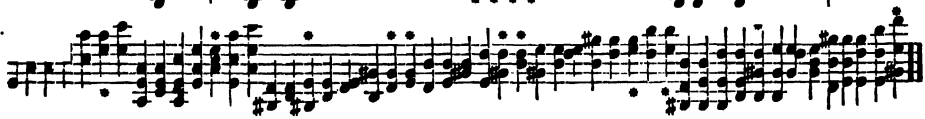
Prepared by A. E. HARRIS.

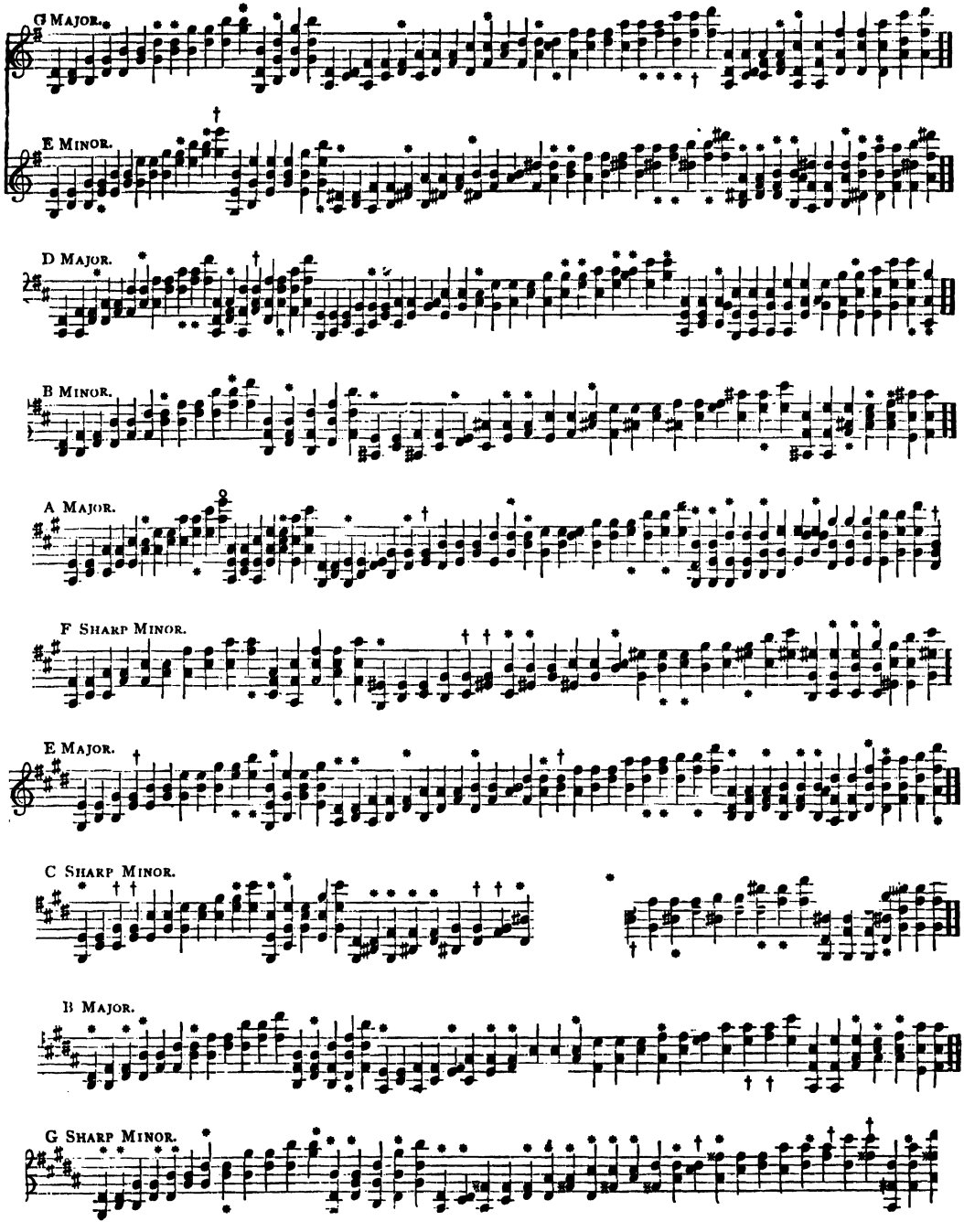
NOTE.—Chords marked (*) are playable, but should be avoided when simple, easy fingering is desired. Those marked (†) are still more difficult.

C MAJOR.

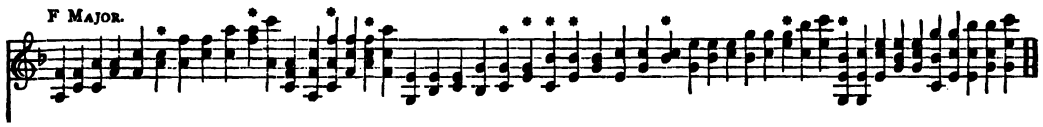


A MINOR.

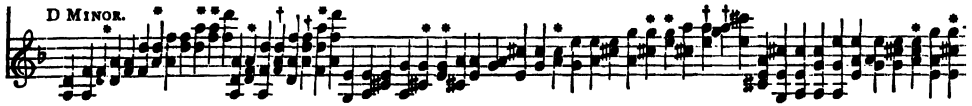



G Major.
E Minor.
D Major.
B Minor.
A Major.
F Sharp Minor.
E Major.
C Sharp Minor.
B Major.
G Sharp Minor.

F MAJOR.

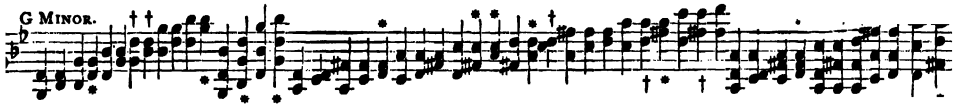


D MINOR.

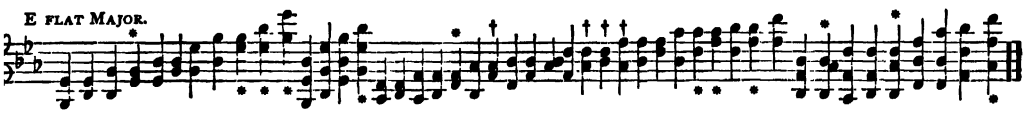


B FLAT MAJOR.

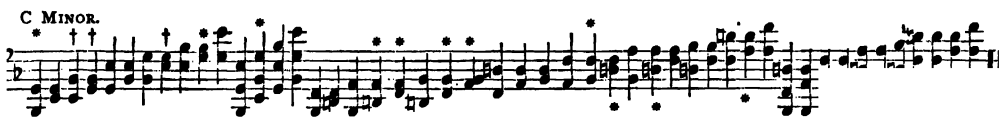
G MINOR.



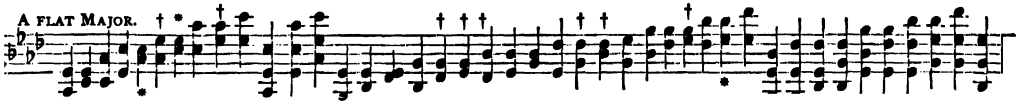
E FLAT MAJOR.



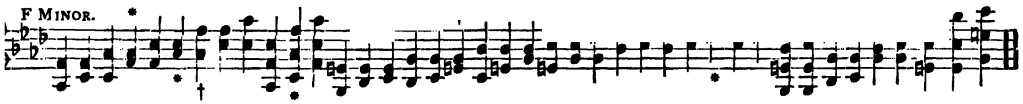
C MINOR.



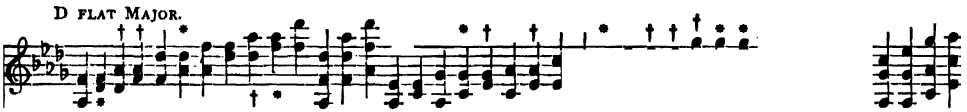
A FLAT MAJOR.



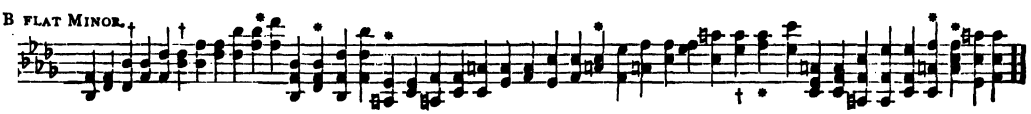
F MINOR.

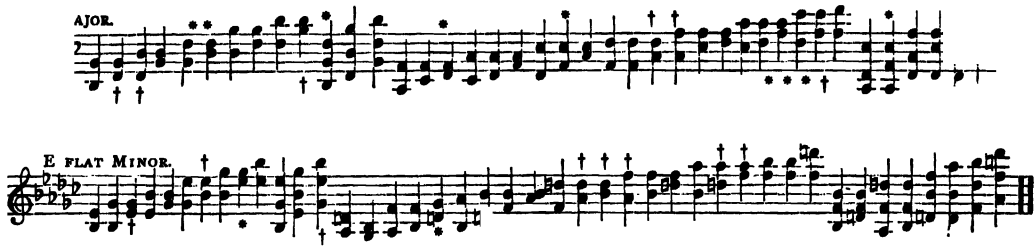


D FLAT MAJOR.



B FLAT MINOR.





Instruments played with a bow, of which the combination forms what is somewhat improperly termed a *quatuor*, are the base and constituent element of the whole orchestra. From them is evolved the greatest power of expression, and an incontestable variety of different qualities of tone. Violins particularly are capable of a host of apparently inconsistent shades of expression. They possess (as a whole) force, lightness, grace, accents both gloomy and gay, thought, and passion. It is not needful to calculate for them the duration of a *holding note*, and to contrive for them occasional rests; they are sure never to be out of breath. Violins are faithful, intelligent, active and indefatigable servants.

Slow and tender melodies, confided too often, now-a-days, to the wind instruments, are nevertheless never better rendered than by a mass of violins. Nothing can equal the touching sweetness of a score of first strings made to sing by twenty well-skilled bows. That is, in fact, the true female voice of the orchestra, —a voice at once passionate and chaste, heart-rending, yet soft, which can weep, sigh, and lament, chant, pray, and muse, or burst forth into joyous accents, as none other can do.

THE VIOLA.

The four strings of the viola are generally tuned in fifths, like those of the violin; and at a fifth below them:—

Its ordinary compass is at least three octaves:— from low C to C above the staff.

With the chromatic intervals.

It is written in the C clef (3rd line); and in the G clef, when it extends high.

What has been said on the subject of shakes, bowing, chords struck together or played arpeggio, harmonics, etc., is throughout applicable to the viola,— considered as a violin a fifth lower.

Of all the instruments in the orchestra, the one whose excellent qualities have been longest unappreciated, is the viola. It is no less agile than the violin, the sound of its strings is peculiarly telling, its upper notes are distinguished by their mournfully passionate accent, and its quality of tone altogether, of a profound melancholy, differs from that of other instruments played with a bow. It has nevertheless, been long neglected, or put to a use as unimportant as ineffectual.

Melodies on the high strings of the viola have a marvellous beauty in scenes of a religious and antique character. This quality of the viola,—so choice when it is judiciously employed, and skilfully contrasted with the qualities of tone of violins and other instruments, —necessarily soon palls.

When the violoncellos play the air, it is sometimes excellent to double them in unison by the violas. The tone of the violoncellos then acquires additional roundness and purity, without becoming less predominant. An example of this, is the theme of the Adagio in Beethoven's C minor Symphony.

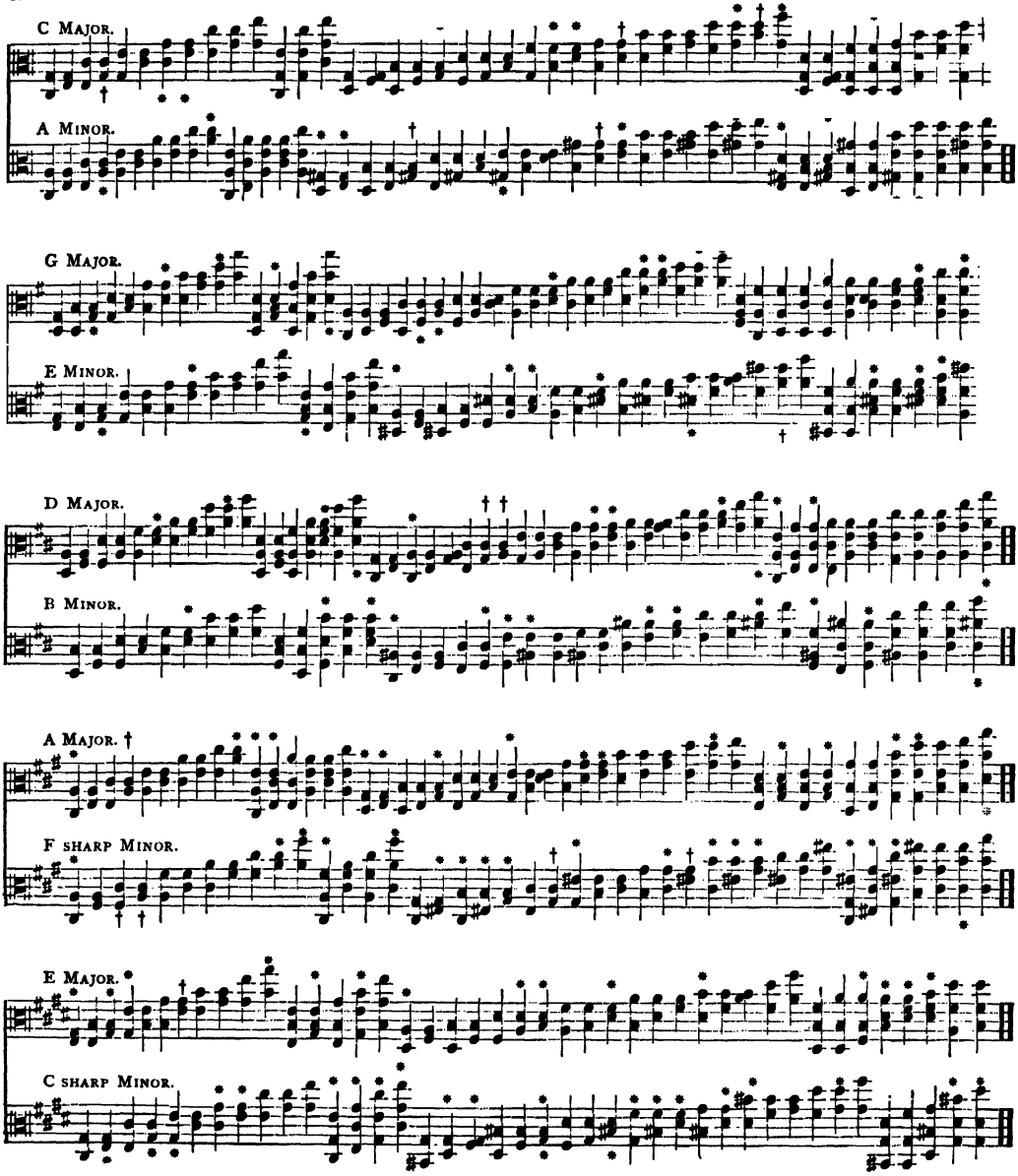
The following table has been prepared for the use of writers unfamiliar with the viola.

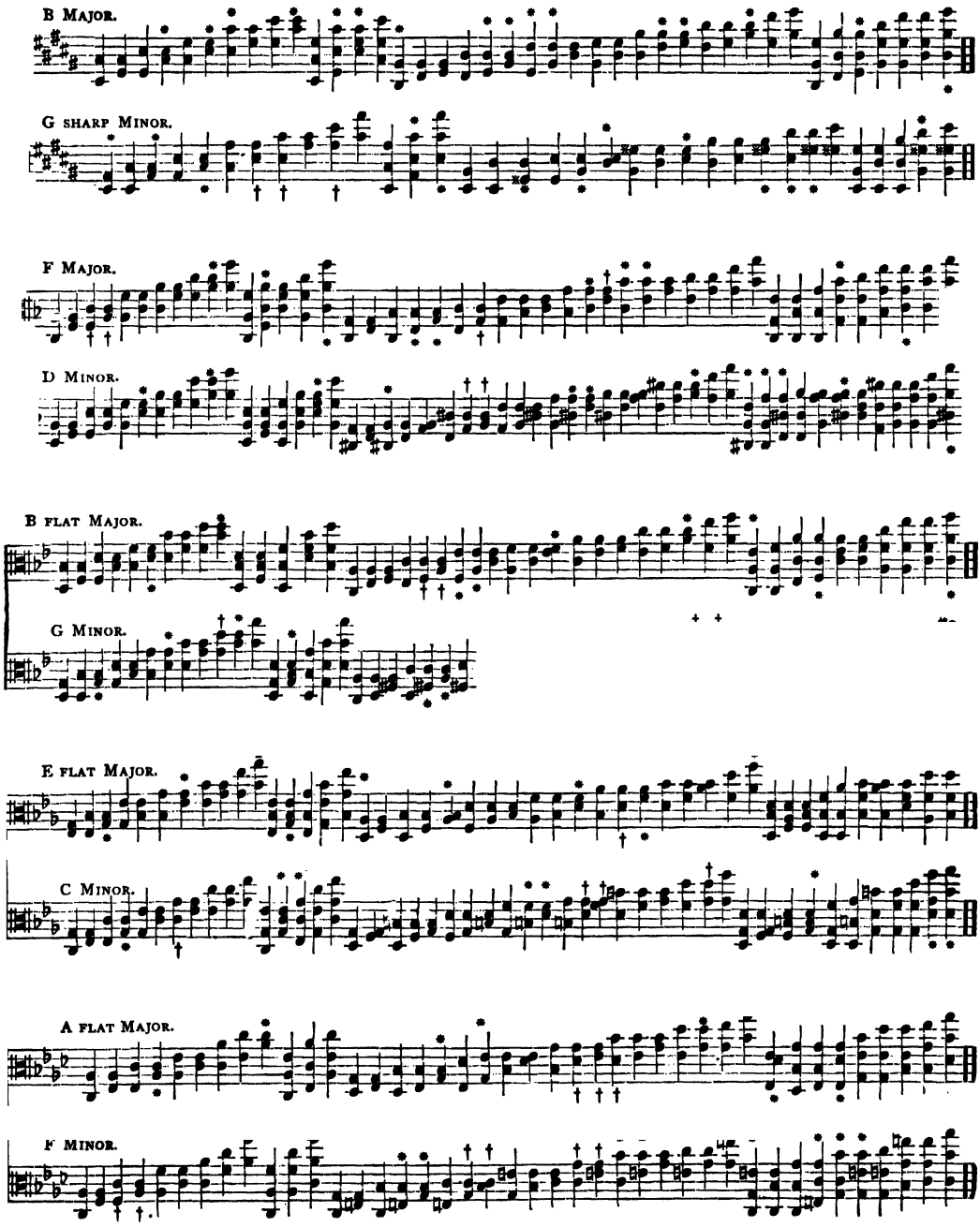
TABLE OF CHORDS FOR THE VIOLA

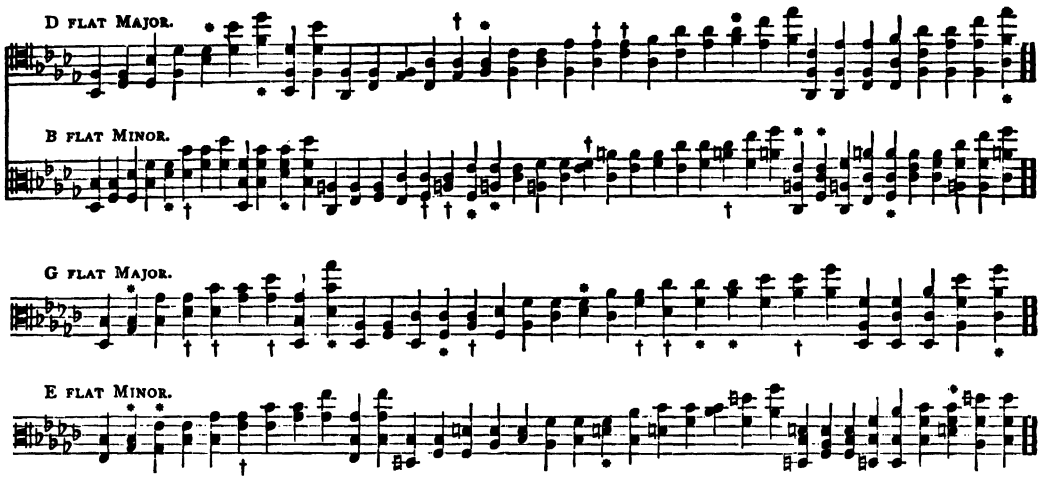
IN ALL THE MAJOR AND MINOR KEYS.

Prepared by A. E. HARRIS.

NOTE.—Chords marked (*) are playable, but should be avoided when simple, easy fingering is desired. Those marked (†) are still more difficult.



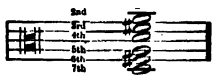

B MAJOR.
G SHARP MINOR.
F MAJOR.
D MINOR.
B FLAT MAJOR.
G MINOR.
E FLAT MAJOR.
C MINOR.
A FLAT MAJOR.
F MINOR.



THE VIOLE D'AMOUR.

This instrument is larger than the viola. It has almost universally fallen into disuse; and were it not for Mr. Urhan, of Paris, it would be known to us only by name.

It has *seven catgut strings*, the three lowest of which—like the C and G of the viola,—are covered with silver wire. Below the neck of the instrument, and passing beneath the bridge, are seven more strings, *of metal*, tuned in unison with the others, so as to vibrate *sympathetically* with them; thereby giving to the instrument a second resonance, full of sweetness and mystery. It was formerly tuned in several different whimsical ways; but Mr. Urhan has adopted the following mode of tuning in thirds and fourths, as the most simple, and the most rational:—



The compass of the viole d'amour is three octaves and a half, at least. It is written—like the viola,—on two clefs:—

Thus may be seen, by the disposal of its strings, that the viole d'amour is peculiarly appropriate to chords of three, four, or more notes, whether played arpeggio, or struck, or sustained; and above all, to melodies of double notes. Only, it is evident that, in designing *harmonics* for this instrument, a different plan must be pursued from that employed for violins, violas, and violoncellos, which are tuned by fifths; and that care must be taken to avoid the notes of chords beyond a third or fourth in general, unless the lower string be an open string. Thus, the A of the second octave gives every latitude to the high D, to extend its scale above itself:—

It is needless to observe that the chords of the minor third and the second—

are impracticable below; since the sounds that constitute them are necessarily on the D string. A moment's reflection shows similar impossibilities on the lowest string of all instruments played with a bow.

Harmonics have an admirable effect on the viole d'amour. They are obtained precisely in the same way as those of the violin and viola; excepting that its seven open strings being disposed as a common chord, give the viole d'amour great facility in producing with

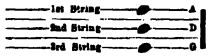
rapidity the arpeggios of its chord of D major, in the octave and double octave above.

It will be seen that if it be proposed to use these charming arpeggios of the viole d'amour, the keys of D, G, A, F♯, or B♭, are those which will best allow of so doing. The extreme charm of these arpeggio harmonics on the open strings, quite deserve that every pains should be taken to render them available.

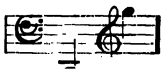
The quality of the viole d'amour is faint and sweet; there is something *seraphic* in it—partaking at once of the viola, and of the harmonics of the violin. It is peculiarly suitable to the legato style, to dreamy melodies, and to the expression of ecstatic or religious feelings.

THE VIOLONCELLO.

Its four strings are tuned in fifths, and precisely an octave lower than the four strings of the viola;—



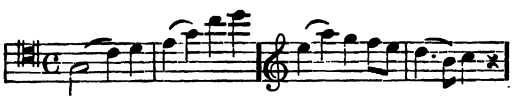
Its compass may be, even in the orchestra, three octaves and a half;—from low C, with the Chromatic Intervals, to G.

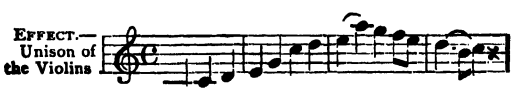


Great performers go still higher; but, in general, these extreme upper notes—which have no beauty excepting in the conclusion of slow passages—are seldom given in natural sounds; they are mostly taken in harmonics, which are produced more easily, and are of better quality.

It may not be amiss, before going farther, to premonish the reader of the double sense given to the G clef in violoncello music. When it is written from the commencement of a piece, or immediately after the F clef, it presents to the eye the octave above the real sounds.

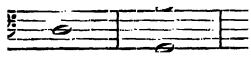
It has its full value only when succeeding the C clef (on the fourth line); in which case it represents the real sounds, and not their octave above:—





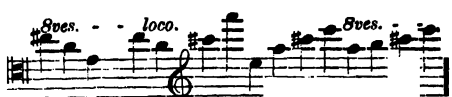
This custom, which there is nothing to justify, leads to errors the more frequent, from certain violoncellists refusing to conform to it, and choosing to receive the G clef in its true acceptation. In order to avoid all misconception, it will be here employed only after the C clef; and when this would lead us too far beyond the stave, the G clef shall always represent the real sounds, as in the preceding example.

That which has been said respecting double strings, arpeggios, shakes, and the bowing of the violin, applies equally to the violoncello. It should, however, never be lost sight of, that the violoncello strings, being longer than those of the violin, demand a wider extension of the fingers of the left hand; whence it follows that passages of tenths on a double string, practicable on the violin and viola, are not so on the violoncello; and that an isolated tenth cannot be struck, unless the lower note is on an open string.

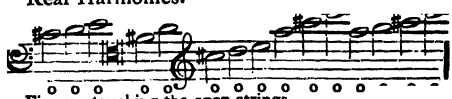


The following tenths would be impossible:—

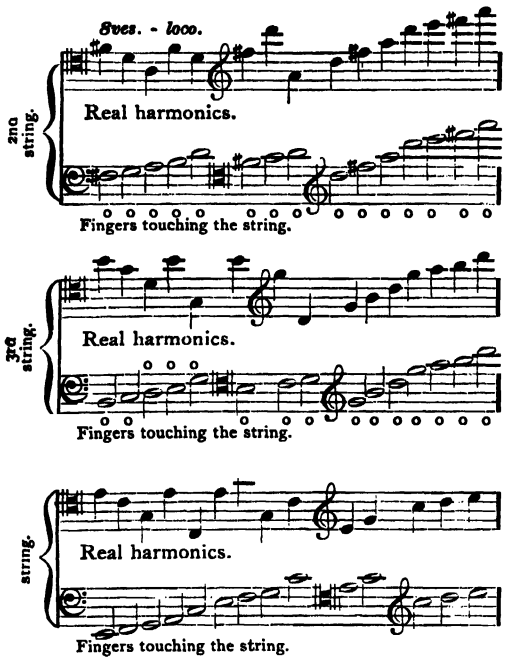
The violoncello, on account of the depth of its quality and the thickness of its strings, is not susceptible of the extreme agility belonging to the violin and viola. As to the natural and artificial harmonics—of which frequent use is made on the violoncello in solo passages,—they are obtained by the same means as those of the violin and viola. The length of its strings even contributes to render the extreme upper notes in harmonics, which are produced near the bridge, much more easy and more beautiful than those of the violin. Here is a table of those which are best obtained from each string:—



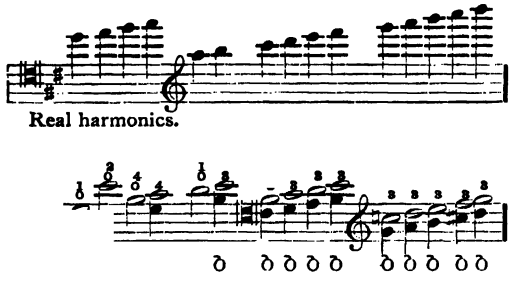
Real Harmonics.



Fingers touching the open strings.



Scale of natural and artificial harmonics;—



Harmonies in harmonics on the violoncello would doubtless have a charming effect in the orchestra, where the piece was soft and slow; nevertheless, it is easier, and consequently less hazardous. to obtain the same result by means of divided violins playing high on the first string *with sordines*. These two qualities of tone resemble each other so closely as to be almost undistinguishable.

To violoncellos in the orchestra, is ordinarily given the part of the double-bass; which they double, an octave above or in unison; but there are many instances when it is advisable to separate them, either to let them play on the high strings, a melody or melodious phrase; or to take advantage of their peculiar sonorousness on an open string, for producing a specific harmonial effect, by writing their part *below* the double-basses, or, lastly, to assign them a part nearly like that of the double basses, but giving them more rapid notes, which the latter could not well execute.

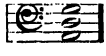
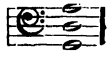
The composer should never, without an excellent reason, entirely separate the violoncellos and double-basses. The bass part, thus forsaken by the violoncellos, becomes dull, bald, extremely heavy, and ill-connected with the upper parts. When it is required to produce a very soft harmony of stringed instruments, it is, on the contrary, often well to give the bass to the violoncellos, omitting the double-basses.

Violoncellos together, to the amount of eight or ten, are essentially melodious; their quality, on the upper strings, is one of the most expressive in the orchestra. Nothing is more voluptuously melancholy, or more suited to the utterance of tender, languishing themes, than a mass of violoncellos playing in unison upon their *first string*. They are also excellent for airs of a religous character; when the composer ought to select the strings upon which the phrase should be executed. The two lower strings, C and G, especially in keys which permit the use of them as *open strings*, are of a smooth and deep sonorousness, perfectly appropriate in such a case; but their depth itself scarcely ever permits of giving them any other than basses more or less melodious,—the actual airs being reserved for the upper strings.

The *tremolo* in *double string*, and *arpeggios* in *forte*, suit violoncellos perfectly; they add greatly to the richness of the harmony, and augment the general sonorousness of the orchestra.

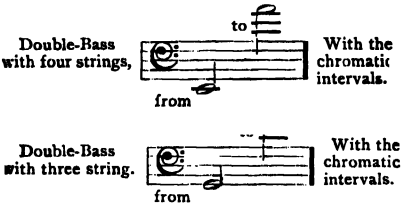
The *pizzicato* of the violoncello cannot have much rapidity, and the means proposed for improving the execution of that of violins, cannot avail in this case, owing to the thickness and tension of the strings, and to their too great elevation above the finger-board of the instrument. According to the procedure generally in use, players seldom exceed, in pizzicato, the rapidity of *eight quavers* in a bar in two-time (Allegro non troppo), or that of *twelve semiquavers*, arpeggio, in a $\frac{6}{8}$ bar (Andantino).

DOUBLE-BASSES.

There are two kinds; those with three, and those with four strings. Those with three strings are tuned in fourths  or in fifths 

Those with four are tuned in fourths:—

The sound of both is an octave lower than the notes written. Their compass in the orchestra is two octaves and a quarter; allowing, for three-stringed double-basses, two or three notes, as it is tuned less below.



To double-basses belong, in the orchestra, the lowest sounds of the harmony. It has been stated, upon what occasion they may be separated from the violoncellos; and then may be palliated, to a certain degree, the defect which arises for the basses out of this disposal, by doubling them in octave, or in unison with the bassoons, the corni di bassetto, the bass clarinets, or the ordinary clarinets, in the extreme lower notes. There are cases where the natural harmonics of the double-basses may be successfully introduced. They are the same, in the octave below, as those of violoncellos. Strictly speaking, chords and arpeggios may be used on the double-bass; but it must be by giving them two or three notes at the utmost, of which one only need not be open.

The *intermittent tremolo* may easily be obtained, thanks to the elasticity of the bow, which causes it to rebound several times on the strings, when a single blow is somewhat sharply struck.

The *continuous tremolo* of double-basses, rather less close than this last, is nevertheless of excellent dramatic effect; and nothing gives a more menacing aspect to the orchestra; but it should not last too long, otherwise the fatigue it occasions the performers *who are willing to take the trouble* of doing it well, would soon render it impossible. When a long passage renders it needful thus to disturb the depths of an orchestra, the best way is, by dividing the double-basses not to give them a real *tremolo*, but merely quick repercussions, mutually disagreeing as rhythmical values, while the violoncellos execute the true *tremolo*.

Rapid diatonic groups of four or five notes have frequently an admirable effect, and are readily executed, provided the passage contain at least one open string.

If a long rapid passage be absolutely necessary, divide them, and apply the dispersing process recommended for violins.

Composers are so injudicious, now-a-days, as to write passages of such rapidity, that violoncellos themselves would find difficulty in executing them, whence results a horrible disorder and confusion. They should therefore be careful to ask of double-basses no more than possible things; of which the good execution shall not remain doubtful.

Flights of little notes, before larger ones; —

are executed by sliding rapidly on the string, without paying attention to the precision of any of the intermediate sounds; and have an extremely good effect.

Beethoven, also, has availed himself of these scarcely articulate notes; but (contrary to the previous example), by accenting the first note of the group more than the last. (The passage of the Storm in the Pastoral Symphony.)

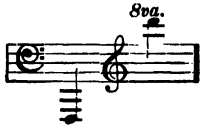
Sometimes it has a fine and dramatic effect, to give the violoncellos the real bass, or, at least, the notes which determine the chords, and strike the accented parts of the bar: while beneath them, the double-bass has an isolated part, the design of which, interrupted by rests, allows the harmony to rest upon the violoncellos.

The *pizzicato* of double-basses, either loud or soft, is good, unless it be employed on very high sounds: but it changes character, according to the harmonies beneath which it occurs. Thus, the famous pizzicato *A*, in the overture to *Freyschutz*, is big with threats and infernal accents, only because of the reflex of the chord of the diminished seventh, (F♯, A, C, B♭,) the first inversion of which it resolves on the unaccented part of the bar. Let it become the major tonic, or dominant, produced mezzo-forte, as in the case in question, and this *A* would no longer have anything strange in its effect. Sordines are employed on double-basses, as on other instruments played with a bow; but the effect they produce is little marked.

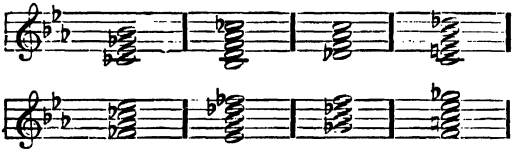
Stringed Instruments played with the Hand.

THE HARP.

This instrument is essentially anti-chromatic: that is to say, successions by half-tones are almost interdicted for it. The reason of this will be presently stated. Its compass was formerly but five octaves and a sixth.



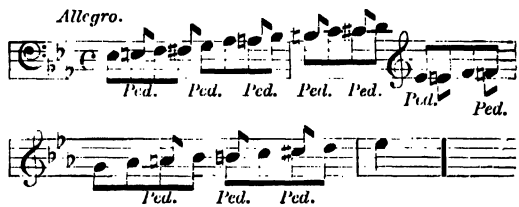
The natural scale belongs to the key of E♭; and in this key it was, that all harps were tuned; when the skiltul manufacturer, Erard, invented the mechanism which obviated them, and proposed tuning the harp in C♭; which has been adopted by all harp players of the present day. The chromatic intervals can be obtained on the ancient harp only by means of seven pedals, put in motion by the player, and fixed *one after the other* with the foot, each of which heightens by half a tone, the note to which its mechanism applies, but throughout the extent of the scale, and not singly. Hence every chromatic scale (unless in an excessively slow movement), every progression of chords proceeding chromatically, or belonging to different keys, the majority of florid passages containing appoggiaturas with accidentals, or small chromatic notes, are all impracticable. There are even on the harp in E♭, four chords of seventh major, and four chords of ninth major, totally impossible to play. These are: —



It is, in fact, evident that every chord in which C♭, is to be heard simultaneously with B♭, cannot be possible. The same is the case with the D♭, which results from raising the C♮; and with the G♭, produced by the raising of the F. The mechanism of the pedals of the harp in E♭, only serving to restore the three flattened notes (B, E, A) to their natural state, and to sharpen four other notes (F, C, G, D), it follows, that this harp can only be prepared in eight keys; namely E♭, B♭, F, C, G, D, A, E. The flattened keys are only produced in harmonics, and by taking and leaving quickly one or more pedals. In A♭, for instance, the D♭ is only the harmonic of C♯; and the player should quit this C♯ pedal immediately he has taken it; otherwise, he will not be able to make the C♮ heard, — the major third of the key in which he is playing: and moreover, he must skip a string (D♮) when ascending diatonically, which is so inconvenient, that the use of such scales may be considered impracticable: —

This inconvenience, and this difficulty become doubled in D♭ and in G♭, — both, keys nearly inaccessible, except for certain chords. Again, the key of G♭, like that of C♭, presents another difficulty, — that of compelling the player to an actual transposition for some notes of his scale; since he must strike the F♯ string when the written note is G♭; the B♮ string when the note is C♭; and the C♯ string when the note is D♭. As for the key of C♭, it becomes less inaccessible, if written in its other form, — that of B♮; but all the pedals being taken, there still remains to be overcome in this scale (as in that of A♭) the difficulty of skipping a string, and quitting a pedal to retake it again, for the leading note (in harmonic) and the tonic, which occur upon the same string: —

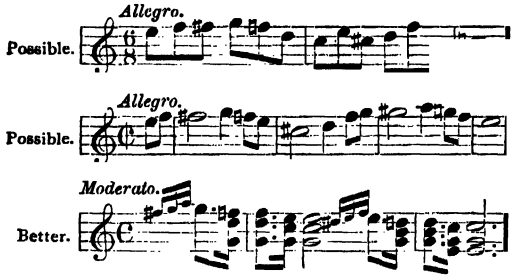
It will be perceived that, for the execution of a chromatic scale of two octaves' extent like this: —



it is necessary to put in action five pedals, rapidly in succession, for the first octave only; and also that they must all be very promptly quitted, in order to replace in their primitive condition those notes which they raised, and which are to recur in the upper octave, to be again retaken as in the first octave. Such a scale therefore, even in a movement of moderate time, is impossible for *any harp*. If the object be a succession of chords belonging to different keys, the impossibility becomes still more evident; because, in that case several pedals will have to be taken at once and successively: —

Certain appoggiaturas and ornaments containing chromatic successions, may in fact be executed after a fashion: but the majority of these ornaments are scarcely practicable; and those which form the exceptions, produce a very indifferent effect, on account of

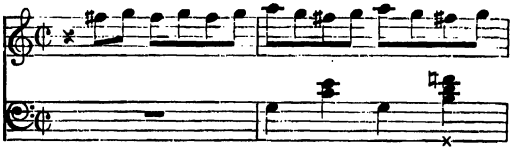
the influence which the movement of the pedal taken and quitted at the same instant, exercises over the sonorousness of the string : —



The following example, on the contrary, and all those which, like it, contain several semitones in a short space, and in a quick movement, are next to impossible : —

It should now be stated, that the harp being played with two hands, is therefore written for upon two lines. The lower line usually has the F clef, and the upper one the G clef; according to the height of the bass notes, or the depth of the treble notes, the G clef or the F clef may also find themselves on the two lines at one end and the same time.

It will be seen that this disposal renders the inexecutable passages still more numerous for the harp in B♭; since a passage that may be easy for the right hand, becomes impossible, if the left hand wish to strike certain notes of accompaniment which are altered by a pedal in the melody, while the harmony admits of them only in their ordinary condition : —

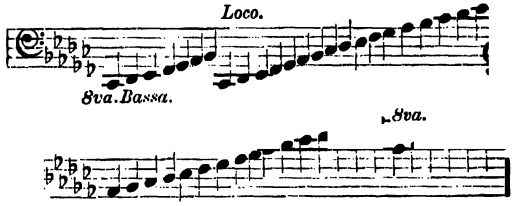


The chord marked with a cross cannot be played; since it contains an F ♮, sharpened in the upper part. In such a case, therefore, the note which thus presents itself under a double aspect, must be suppressed in one or other of the parts. In the preceding example, it is better to mutilate the chord in the left hand, and leave out the F ♮.

When a melody already played by other instruments is to be repeated on the harp, and contains chromatic passages either impossible or hazardous, it should be dexterously modified, by substituting for one or more of the altered notes, other notes comprised in the harmony.

Struck with the important obstacles just cited, **M.** Erard invented *double-action* harps, which allows the harp — if not to play chromatic successions, — at least to play in all keys, and to strike or arpeggio all chords.

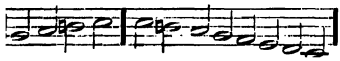
The double-action harp is tuned in C♭; and its compass is six octaves and a quarter : —



The seven pedals with which it is furnished are made so that the player may, by means of each of them, raise at option each string a tone, or a semitone only. By taking in succession the seven semitone pedals, the harp in C♭ can therefore be set in G♭, in D♭, in A♭, in E♭, in B♭, in F, or in C♮. In still farther raising each string another semitone, by means of the second action of the pedals, the seven notes of the natural scale will become sharpened; since the seven pedals produce F♯, C♯, G♯, D♯, A♯, E♯, and B♯, which gives to the harp the power of playing in the keys of G, D, E, B, F♯, and C♯.

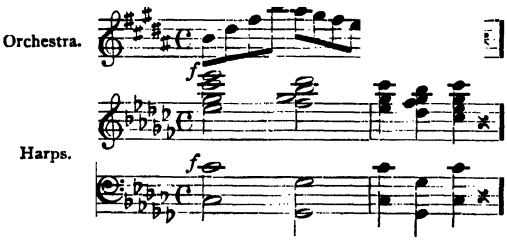
These, then, are all the keys accessible to the harp; only, the minor scales cannot be *set*, unless by treating them in ascending as in descending, without regarding the usage adopted with respect to the sixth and seventh notes; otherwise, two pedals must be taken and quitted : —

By adopting the interval of the augmented second between the sixth and seventh notes, the minor scale can be set and the accidental use of the pedals will not be necessary; which is a considerable advantage, and should suffice to make this scale preferred : —



As for the chords interdicted to the harp in E♭, it will be seen that the double action renders them possible.

If double-action harps have to be employed in an orchestral piece set for other instruments in B♮ major, it would be greatly better for the sonorousness, and for the convenience of execution, to write them transposed into their key of C♭:—



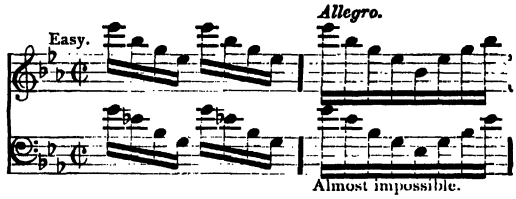
Composers should have a care, in writing harp parts, to forewarn the player, a little in advance, of the change he will have to make, and of the pedal he will soon have to take, by these words placed a few bars before the occurrence of the modulation:—*Prepare the G♯, Prepare the key of C♮, etc.*

The nature of the instrument having been explained, we proceed now to the fingering; which many composers confound with that of the pianoforte, which it nowise resembles. With each hand, chords of four notes may be struck, of which the two extreme notes do not extend beyond an octave:—

Also, by a great stretch of the thumb and little finger, chords of a tenth may be reached.

But this position is less convenient, less natural, and therefore less sonorous; since none of the fingers can attack the string with as much force as in the ordinary position. Chords, which lie in the extreme lower part of the instrument, produce confused harmonies and should be avoided. Such deep sounds are only fit for doubling a bass in the octave below.

The successive execution of the notes of a chord, either ascending or descending, is perfectly in the character of the harp. Generally speaking, they should not exceed an octave extent; particularly, if the movement be quick; otherwise, they would necessitate a change of position of extreme difficulty.



The note which exceeds the extent of an octave should never be written but for the termination of a phrase; as thus:—

Care should be taken, in general, not to write for the hands too near together; and to keep them separated by an octave or a sixth at least, otherwise they interfere with each other.

All successions which oblige the same fingers to skip from one string to another, can only be written for a movement in very moderate time.

When a rapid series of diatonic octaves is desired, they should generally be written for the two hands. This equally applies to series of sixths. They are always—as with scales in thirds—practicable for a single hand: but only in descending; the thumb then sliding from one to the other of the upper notes, while the lower notes are played by the three fingers.

As an exception to what has been said above respecting the distance between the parts, these same scales in thirds are practicable for two hands. Nevertheless, it is still better, either to write these series of thirds for two harps, by giving the higher part to one and the lower part to another; or,—if there be but one harp, and much sound is wished to be obtained,—by separating the parts an octave, and then to write series of tenths.

If the object be to let a rapid ascending or descending arpeggio be heard, which exceeds the extent of an octave, instead of writing it in two parts, it should be dispersed, by giving a fragment to one hand while the other changes its position; and so on, reciprocally.

If doubled in the octave, it would be impracticable, but possible in a slow movement.

The shake exists for the harp; but its effect is only tolerable on the high notes.

Iteration in two or four parts (very useful sometimes in the orchestra) may likewise be obtained, and more simply, by employing two or more harps, and

by writing *cross fires*, which present no difficulty in the execution, and produce precisely the desired effect:—

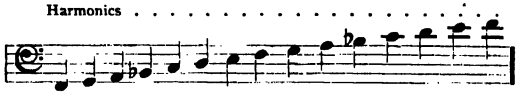
Of all known qualities of tone, it is singular that the quality of horns, of trombones, and generally of brass instruments, mingles best with harps. The lower strings (exclusive of the soft and dull strings of the extreme depth), the sound of which is so veiled, so mysterious, and so fine, have scarcely ever been employed but for bass accompaniments of the left hand; and the more the pity. The fact is they have not thought to avail themselves of this especial quality in tone.

The strings of the last upper octave have a delicate crystalline sound, of freshness, which renders them fit for the expression of graceful fairy-like ideas, and for giving murmuring utterance to the sweetest secrets of smiling melodies.

The *harmonics* of the harp, — particularly of many harps in unison, — are still more magical. But nothing comes near the sonorousness of these mysterious notes, when united to chords from flutes, and clarinets playing in the medium.

The best, and almost the only, harmonics for the harp, are those obtained by touching with the lower and fleshy part of the palm of the hand the centre of the string, while playing with the thumb and two first fingers of the same hand; thus producing the high octave of the usual sound. Harmonics may be produced by both hands.

All the strings of the harp are not fit for harmonics: only the two last low octaves should be employed for this purpose.

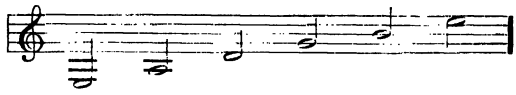


In case the quickness of the composition and the character of the instrumentation demands a speedy transition of a harp part from one key into another, very remote from that which precedes it (from E♭ into E♮, for instance), it cannot be effected upon the same instrument. If the transition be not sudden, and that there be but one harp-player to be had, the composer must still let the performer have a sufficient number of rests to give him time to apply the requisite pedals for modulation.

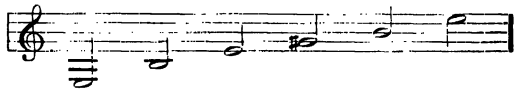
THE GUITAR.

The guitar is an instrument suited for accompanying the voice, and for figuring in a few unnoisy compositions, as also for executing singly pieces more or less complicated in several parts, which possess a true charm when performed by really good players.

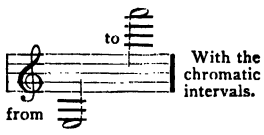
The guitar has six strings, tuned in fourths and thirds, thus:—



It is sometimes tuned in the following manner; especially for pieces written in the key of E:—



The guitar is a transposing instrument of three octaves and a fifth in compass; and written for with the G clef, an octave above the real sound:—

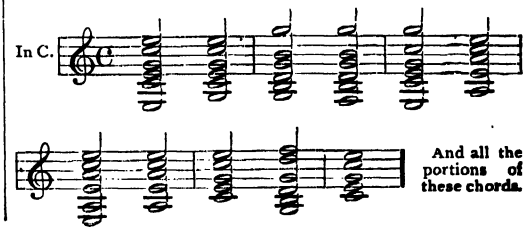


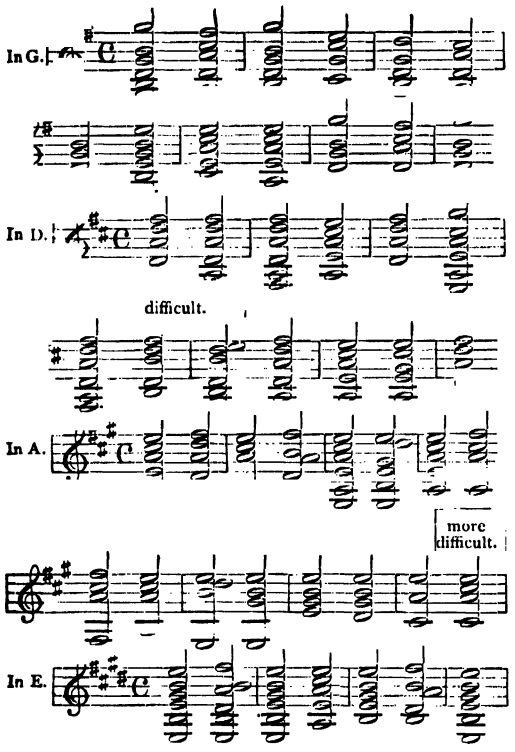
Major and minor shakes can be played throughout the extent of this scale.

It is almost impossible to write well for the guitar without being a player on the instrument.

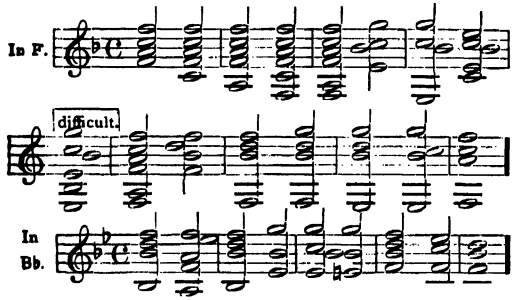
The guitar being especially an instrument of harmony, it is very important to know the chords and likewise the arpeggios which it can execute.

Here is a certain number in different keys. We will commence by the easiest—those which are played without the use of Barrage (marked Barré).

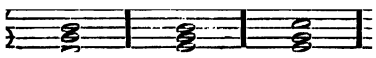




The flat keys are incomparably more difficult than the preceding; and all require Barrage. The easiest chords are the following:—



In all chords, the employment of the first and the third of the lower strings *without the second* should be avoided.

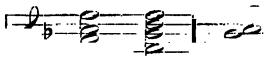


It is impossible to strike these chords; but, by adding the second string to them, they become easy:—

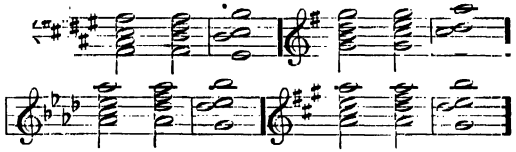
Chords of the dominant seventh also should not be written in the usual position of three thirds above each other.

They are next to impossible.

The three following chords are easy, and link well together, in all keys:—

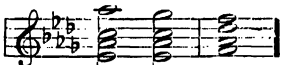


Likewise in F♯, in G, in A♭, etc.:—

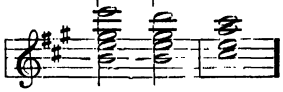


Of course, these chords may sometimes have more than four notes, in keys which permit their having a low open string; in A♯, for instance, in E♯, in G, in F; in short, wherever one of these three notes may be introduced as the bass.

This succession, which requires Barrage of four strings, is equally practicable on the two lower thirds of the neck of the guitar:—

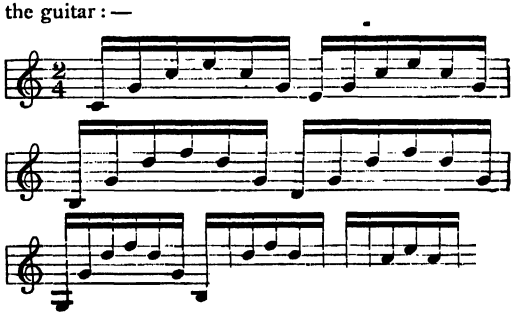


and then, ascending by semitones to



which is the extreme point of height where this fingering can be employed.

The following arpeggios have an excellent effect on the guitar:—



Arpeggios from high to low are rather troublesome of execution, but quite feasible.

The same, reversed, are, on the contrary, very easy.

On account of the retrograde movement of the thumb on the two low notes, the following are much more difficult, and less advantageous: —

Scales bound by twos and twos, with the reiteration of a note, are elegant, and tolerably sonorous; particularly in the brilliant keys of the instrument.

Scales in thirds, although difficult in their two extremes, may be used in a moderately quick movement.

This applies equally to series of sixths and octaves.

Reiterated notes, two, three, four, and even six or eight times repeated, are easily done; prolonged reiterations (*roulements*) on the same note are rarely good excepting on the first string, or at the utmost on the three high strings.

Harmonics are well obtained on the guitar; and upon many occasions, felicitous use may be made of them. The best are those produced by touching the octave, the fifth, the fourth, and the third, major, of the open strings.

As was explained in the chapters on instruments played with a bow, the touched octave brings out this same octave.

The fifth touched produces the twelfth.
Touching the fifths after the six open strings.
The fourth touched produces the double octave.
Touching the fourths after six open strings.
The major third touched produces the seventeenth.
Touching the major third of the six open strings.
The minor third touched produces the nineteenth or octave above the twelfth.
Touching the minor thirds of the six open strings.

These latter harmonics are the least sonorous, and are obtained with difficulty.

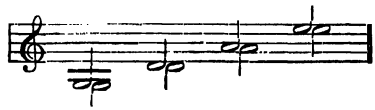
On each string, moreover, chromatic and diatonic scales in artificial harmonics can be produced. In order to form an idea of what the best performers are able to produce in this way, the compositions of such celebrated guitar-players as Zanni de Ferranti, Huerta, Sor, etc., should be studied.

Its feeble amount of sonorousness does not admit of its being united with other instruments, or with many voices possessed but of ordinary brilliancy.

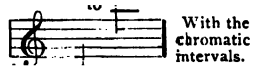
THE MANDOLIN.

There are several kinds of mandolins; the best known has four double strings; that is to say, four times two strings in unison, and tuned in fifths, like the violin.

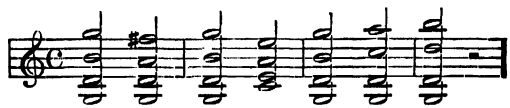
It is written on the G clef:—



The compass of the mandolin is about three octaves:—



It is an instrument more for melody than for harmony; its strings being put in vibration with a quill or plectrum, certainly may allow chords of four notes to be heard, such as these —

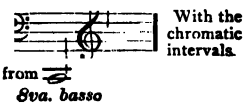


obtained by passing the quill rapidly over the four double notes; but the effect of these groups of simultaneous notes is rather poor, and the mandolin has its real character and effect only in such melodious arpeggio accompaniments as the one written by Mozart in the second act of *Don Giovanni*.

Stringed Instruments with Keys.

THE PIANOFORTE.

The pianoforte is an instrument with a key-board and metallic strings, put in vibration by hammers. Its present compass is seven octaves and one third. It is written on two different clefs at once, the F clef to the left hand; and the G clef, to the right hand. Sometimes, also,—according to the degree of height or depth of the passages assigned to the two hands, clefs are interchanged.



The shake is practicable on all the notes of the scale. The player may strike or arpeggio in any way, and with both hands, a chord of four or even five notes; but, at the same time, they should be written as close as possible.

Chords struck, embracing an interval of a tenth, are possible however; but by omitting the third, and even the octave, for greater facility.

Four, and even five real parts may be written for the pianoforte, by taking care not to place between the extreme parts of each hand, a distance greater than an octave or a ninth at most; unless indeed the pedal which raises the dampers be used, which, by prolonging the sounds without the player's finger remaining on the key-board, allows of augmenting the distance between the parts.

This sign * indicates quitting the pedal. It is mostly used when the harmony changes, in order to prevent the vibration of the notes of the last chord from continuing on to the following chord.

The hands are sometimes made to cross — either in obliging the right hand to pass over the left, or in causing the left to pass over the right.

It is only by studying the compositions of the great performers — those of Liszt especially, — that a just idea can be formed of the excellence to which the art of piano-forte playing has now-a-days attained.

For the pianoforte, as for the harp, it is better in certain cases — in arpeggios, for example — not to bring the hands too near each other.

Diatonic and chromatic scales in thirds, for both hands, are, however, easy.

These same scales, in two parts, are practicable by one hand alone; although difficult, in a quick movement. Moreover, in keys where there are few sharps and flats, the two hands may be written for, in series of sixth-thirds in three parts.

Besides, the pianoforte at the point of perfection to which our skillful manufacturers have brought it now-a-days, may be considered in a double point of veiw: as an orchestral instrument, or as forming a complete small orchestra in itself.

Whenever the pianoforte is made to go beyond soft effects, and attempt a forcible competition with the orchestra, it vanishes entirely. It should accompany, or be accompanied.

Considered as a small orchestra in itself, the pianoforte should have its own appropriate instrumentation. It evidently has one; and this art forms a portion of the pianist's.

Wind Instruments.

Before studying individually each member of this large family, we will fix as clearly as possible the musical vocabulary indicating the different degrees of height or depth of certain instruments, the transpositions to which these differences lead, the established mode of writing for them, and the denominations which have been applied to them.

We will first establish a line of demarcation between those instrunents of which the sound is produced as indicated by the musical signs, and those of which the sound issues above or below the written note. From this classification the following lists result:—

TABLE.

NON-TRANSPOSING INSTRUMENTS: FROM WHICH THE SOUND ISSUES AS IT IS WRITTEN.	TRANSPOSING INSTRUMENTS. OF WHICH THE SOUND IS DIFFERENT FROM THE WRITTEN NOTES
The Violin.	
Viola.	
Viole d'amour.	
Violoncello	The Double-Bass.
Usual Flute	All other Flutes than the usual one.
Hautboy	The Corno Inglese.
Clarinet in C	All Clarinets excepting the Clarinet in C.
Bassoon	Basson-quinte.
Russian Bassoon	Double Bassoon.
Horn in high C	All Horns excepting the Horn in high C.
Cornet à Piston in C	All Cornets à Piston excepting that in C.
Trumpet in C	All Trumpets excepting the Trumpet in C.
Alto Trombone, Tenor Trombone, Bass Trombone	Alto Trombones with Valves.
Ophicleide in C	All Ophicleides excepting that in C

NON-TRANSPOSING INSTRUMENTS.	TRANSPOSING INSTRUMENTS.
Bombardon	The Serpent.
Bass-Tuba.	
Harp	The Guitar.
Pianoforte.	
Organ.	
Voices { when written on their respective clefs ; and not all equally on the G clef . . . . . }	Tenors and Basses. { when written on the G clef ; their sounds then issuing an octave below the written note. }
Kettle-Drums.	
Bells.	
Ancient Cymbals.	
Sets of Bells.	
Glockenspiel	Keyed Instrument with steel bars.
Keyed Harmonica.	

It will be seen by this table that if all the non-transposing instruments said to be in C, emit their sounds as they are written, those like the violin, hautboy, and flute, which have no designation of key, are in the same condition. They are therefore, in the composer's eye, similar to instruments in C. Now, the denomination of some wind instruments, based on the natural sound of their tube, has led to the most singular and most absurd consequences: it has caused the art of writing for transposing instruments to become a very complicated task, rendering the musical vocabulary perfectly illogical. It is therefore high time to revert to this habit, and to establish some kind of order where we find so little existing.

Performers sometimes say — speaking of the tenor trombone — the trombone in B♭; in speaking of the alto trombone, the trombone in E♭; and still more frequently, in speaking of the usual flute, the flute in D.

These designations are so far correct, but as performers pay no regard to this resonance of the tube, as they produce really the written notes, it evidently follows that these instruments are not, or are no longer in the list of *transposing* instruments; that they consequently belong to that of the *non-transposing* instruments; and that they are supposed to be in C, like hautboys, clarinets, horns, cornets and trumpets in C; while no designation of key should be applied to them, or else give them that of C. This established, it will be seen of what importance it is, not to call the usual flute, flute in D; the other flutes, higher than this one, having been designated according to the difference existing between their pitch and that of the usual flute, it has become the fashion — instead of saying simply, tierce flute, ninth flute, which at least offers no confusion in the terms — to call these instruments, flute in F, flute in E♭. And to what does this lead? In a score, the small clarinet in E♭, of which the C really makes E♭, can execute the same part as a third flute, so-called in F; and these two instruments, bearing the names of different keys, are nevertheless in unison. The denomination of one or other must be false; and it is absurd to adopt solely for *flutes* a mode of appellation and of designation of keys, different from that in use for *all other instruments*.

Hence the principle which I propose, and which renders impossible all misunderstanding: the key of C is the point of comparison which should be taken to specify the keys of transposing instruments. The natural sound of the tube of non-transposing wind instruments can never be taken into consideration.

All transposing instruments, or only transposing in the octave — of which consequently the written C gives C — are considered as being in C.

Accordingly, if an instrument of the same kind is tuned above or below the pitch of the typical instrument, this difference will be designated consonantly with the analogy which exists between it and the key of C. Consequently, the violin, the flute, and the hautboy, which play in unison with the clarinet in C, the trumpet in C, the horn in C, *are in C*, and if a violin, a flute, or a hautboy be employed, tuned a tone higher than the usual instruments of this name, this violin, this flute, this hautboy, then playing in unison with clarinets in D, and trumpets in D, *are in D*.

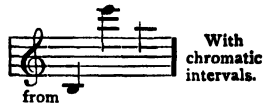
Whence I conclude, that, for flutes, the old mode of designating them should be abolished. that the tierce flute should no longer be called flute in F; but flute in E♭, since its C makes E♭: nor ninth flutes and minor second flutes, flutes in E♭; but large or small flute in D♭, since their C makes D♭. and so on, with all the other keys.

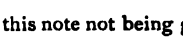
Reed Instruments.

The family of double reed instruments should be distinguished from that of single reed instruments. The former is composed of five individuals:—the hautboy, the corno inglese, the bassoon, the bassoon-quinte, and the double-bassoon.

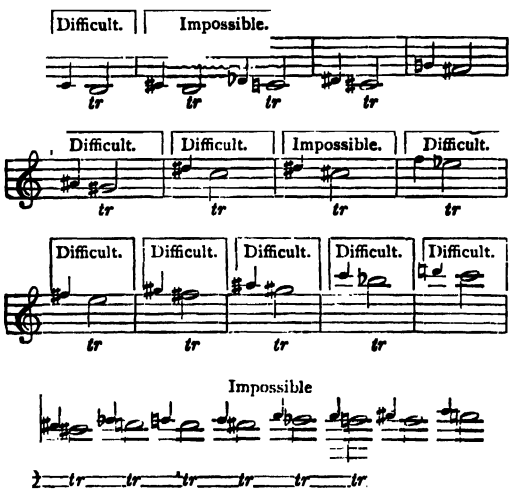
THE HAUTBOY OR OBOE.

Its compass is two octaves and a sixth. It is written on the G clef:—



The two last high notes should be used with much reserve: the F particularly is hazardous, when it presents itself abruptly. Some hautboys have the low B♭,  ; but this note not being generally acquired on the instrument, it is better avoided.

The shakes formed of these different intervals, and of some others also, are therefore impossible, or excessively difficult, and producing a bad effect, as will be seen by the following table:—



Hautboys (Oboi) are much more at their ease in keys where there are few sharps or flats. They should hardly be made to play out of this limit:—

from

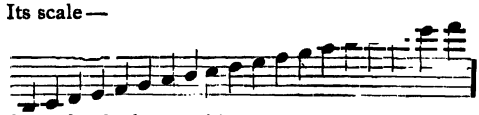
The sounds that exceed it, either below or above, being weak or thin, hard or shrill; and of bad quality. Rapid passages, chromatic or diatonic, can be tolerably well executed on the hautboy; but they only produce an ungraceful and almost ridiculous effect: and the same with arpeggios.

The hautboy is especially a melodial instrument: it has a pastoral character, full of tenderness—nay, even of timidity. Candor, artless grace, soft joy, or the grief of a fragile being, suits the hautboy's accents; it expresses them admirably in its *cantabile*. A certain degree of agitation is also within its powers of expression; but care should be taken not to urge it into utterances of passion—the rash outburst of anger, threat, or heroism. Where—in order to give more weight and body to the harmony, and more force to the group of wind instruments employed—hautboys are absolutely needful. The lower sounds of the hautboys, ungraceful when displayed, may agree with certain wild and lamenting harmonies, united to the low notes of the clarinets, and to the low D, E, F, and G of the flutes and corni inglesi.

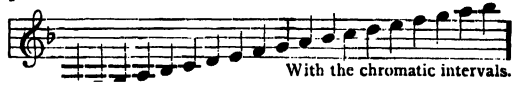
THE CORNO INGLESE.

This instrument is, so to speak, the alto of the hautboy, with which it possesses equal compass. It is written on the G clef, like a hautboy in F below; and, consequently, a fifth above its real sound.

Its scale—



produces for the hearer this:—



Many corni inglesi possess also the low B♭.

If the orchestra play in C, the corno inglese ought to be written in G; if it play in D, the corno inglese should be written in A; etc.

What has just been said upon the difficulties of fingering for the hautboy, in certain encounters of sharpened or flattened notes, applies also to the corno inglese; rapid passages upon it have a still worse effect: its quality of tone, less piercing, more veiled, and deeper than that of the hautboy, does not so well as the latter lend itself to the gaiety of rustic strains. Nor could it give utterance to anguished complainings; accents of keen grief are almost interdicted to its powers. It is a melancholy, dreamy, and rather noble

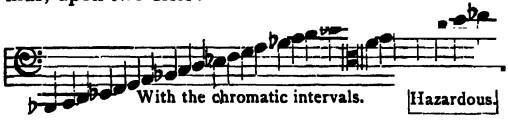
voice, of which the sonorousness has something of vague,— of *remote*,— which renders it superior to all others, in exciting regret, and reviving images and sentiments of the past, when the composer desires to awaken the secret echo of tender memories.

Feelings of absence, of forgetfulness, of sorrowful loneliness, which arise in the bosoms of the audience on hearing a forsaken melody, would lack half its power if played by any other instrument than a corno inglese.

In compositions where the prevailing impression is that of melancholy, the frequent use of the corno inglese hidden in the midst of the great mass of instruments, is perfectly suited. Then, only one hautboy part need be written; replacing the second, by that of the corno inglese.

THE BASSOON.

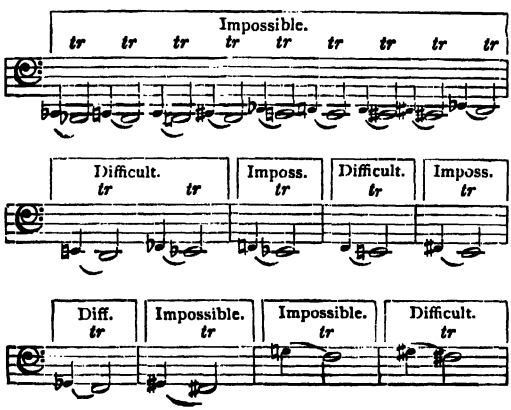
The bassoon is the bass of the hautboy; it has a compass of more than three octaves; and it is written thus, upon two clefs:—



but it is more than prudent not to carry it above the last B ♭. The keys with which it is now-a-days provided, allow it to give the two low notes,

which formerly were interdicted to it. Its fingering is the same as that of the flute.

There are several shakes quite impossible for it, at the two extremes of the bassoon's scale.



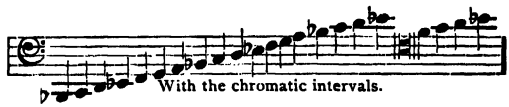
All others above F ♯ are bad or impossible.

The bassoon is of the greatest use in the orchestra on numerous occasions. Its sonorousness is not very great, and its quality of tone, absolutely devoid of brilliancy or nobleness, has a tendency towards the grotesque — which should always be kept in mind, when bringing it forward into prominence. Its low notes form excellent basses to the whole group of wooden wind instruments. The character of their high notes is somewhat painful, suffering — even, I would say, miserable,— which may be sometimes introduced into either a slow melody, or passages of accompaniment, with most surprising effect.

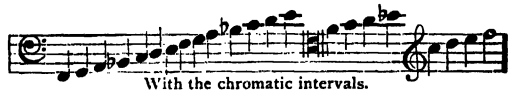
Rapid passages of bound notes may be successfully employed; they come out well when they are written in the favorite keys of the instrument, such as D, G, C, F, B ♭, E ♭, A, and their relative minors.

THE BASSON-QUINTE.

The basson-quinte is a diminutive of the preceding: and its pitch is a fifth higher. In has about the same compass; and, like it, is written upon two clefs,— but transposing:—



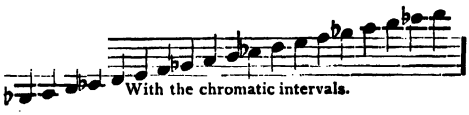
which produces in real sounds the following scale:—



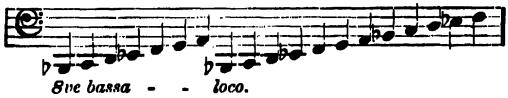
The basson-quinte is to the *high* bassoon what the corno inglese is to the *low* hautboy. The corno inglese should be written a fifth above the real sound, and the basson-quinte a fifth below; therefore, the basson-quinte will play in F when the bassoons play in C, and in G when they are in D, etc.

THE DOUBLE-BASSOON.

This instrument is to the bassoon, what the double-bass is to the violoncello. That is to say, its sound is an octave lower than the written note. It has seldom more than this compass:—



which produces in real sounds:—



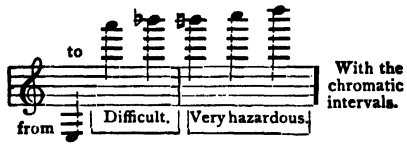
The two first notes of this scale come out with difficulty, and are very ineffective, on account of their extreme depth.

It is needless to add that this very ponderous instrument is only suitable for grand effects of harmony, and to basses of a moderate degree of speed.

CLARINETS.

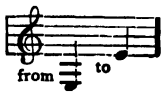
Simple reed instruments, such as the clarinet, and the corno di bassetto, form a family, whose connection with that of the hautboy, is not so near as might be thought. That which distinguishes it especially, is the nature of its sound. The middle notes of the clarinet are more limpid, more full, more pure than those of *double reed* instruments. The high sounds of the last octave, commencing with the C above the stave, partake only a little of the tartness of the hautboy's loud sounds; while the character of the lower sounds approach, by the roughness of their vibrations, to that of certain notes on the bassoon.

The clarinet is written on the G clef; and its compass is three octaves and a half, or more:—

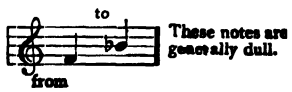


Four registers are reckoned on the clarinet:—the low, the chalumeau, the medium, and the high.

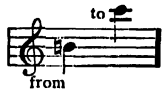
The first comprises this part of the scale:—



The second, this:—

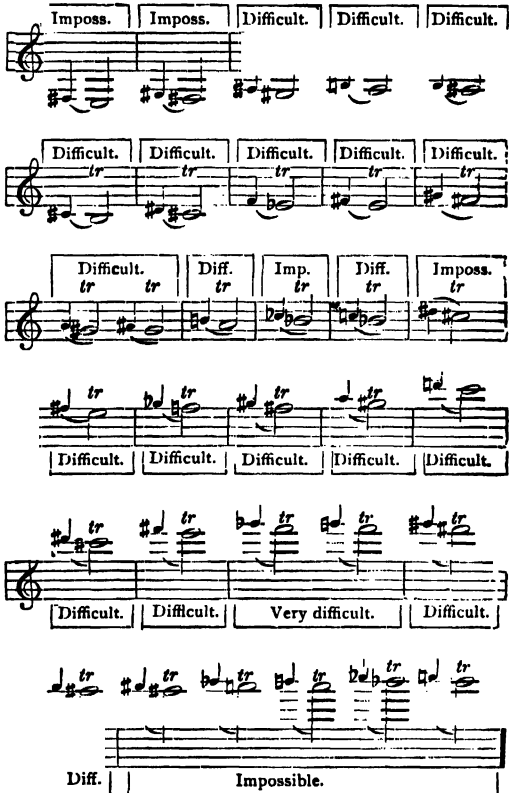


The third contains the following notes:



And the fourth is found in the remainder of the scale up to the highest D.

The number of major and minor shakes practicable on the clarinet is considerable; those which are not to be played with surety, are



The favorite keys of the clarinet are the keys of C, F, G, principally; and then those of B♭, E♭, A♭, D♯ major, and their relative minors. As there exist clarinets in different keys, by their means may be avoided causing the performer to play in keys containing many sharps and flats; as A♯, E♯, B♯, D♭, G♭ major, and their relative minors.

There are four clarinets in general use at present;

The *small clarinet in E♭*; to which it is not well to give a compass beyond three octaves and two notes:—

from

It is in the minor third above that of the clarinet in C; and is written by transposing. The *clarinet in* C, and the *clarinets in* B♭ and *in* A. These two latter have a compass equal to the clarinet in C; but the one sounding a major second and the other a minor third lower, their parts should be written in keys so much higher.

Clarinets have proportionally less purity, sweetness, and clearness, as their key is more and more removed above that of B♭, which is one of the finest on the instrument. The clarinet in C is harder than that in B♭, and its voice has much less charm. The small clarinet in E♭ has piercing tones, which it is very easy to render mean, beginning from the A above the stave.

In general, performers should use only those instruments indicated by the author. Each of these instruments having a particular character, it is at least probable that the composer has chosen one rather than the other, from preference for such and such a quality of tone, and not from caprice. To persist,—as some performers do—in playing (by transposing) on the clarinet in B♭, is, therefore, with some few exceptions, a faithlessness of execution.

It has been said that the clarinet has four registers; each of these registers has also a distinct quality of tone. That of the high register is somewhat tearing. Those of the chalumeau and medium resisters are suited to melodies, to arpeggios, and to smooth passages; and the low register is appropriate—particularly in the holding notes—to those *coldly threatening* effects, those dark accents of *motionless rage*, which Weber so ingeniously invented.

The character of the sounds of the medium register render them favorable for the expression of sentiments and ideas the most poetic. A frivolous gaiety, and even an artless joy, seem alone unsuited to them. The clarinet is little appropriate to the *Idyl;* it is an *epic* instrument, like horns, trumpets, and trombones. Its voice is that of heroic love.

This beautiful soprano instrument, so ringing, so rich in penetrating accents, when employed in masses,—gains as a solo, in delicacy, evanescent shadowings, and mysterious tenderness, what it loses in force and powerful brilliancy.

It is the one of all the wind instruments, which can best breath forth, swell, diminish, and die away its sound. Thence the precious faculty of producing *distance*, echo, an echo of *echo*, and a *twilight* sound.

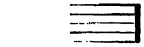
THE ALTO CLARINET

Is no other than a clarinet in F (*low*) or in E♭ (*low*), and consequently at a fifth below the clarinets in C or in B♭, of which it has the whole compass. It is written, therefore, in transposing, either a fifth, or a sixth major above the real sound.

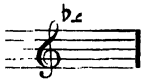
Alto Clarinet in F.

Effect in real sounds.

Alto Clarinet in E♭.



Effect in real sounds.

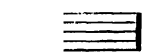


It is a very beautiful instrument, that one regrets not to find in all well-constituted orchestras.

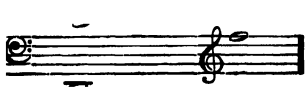
THE BASS CLARINET.

Lower still than the preceding, is an octave below the clarinet in B♭; there is another in C, however (an octave below the clarinet in C); but that in B♭ is much more usual. As it is always the same instrument,—constructed on larger dimensions,—as the ordinary clarinet, its compass remains much the same. Its reed is a little weaker and more covered than that of the other clarinets. The bass clarinet is evidently not destined to replace in the upper notes the high clarinets; but, certainly, to extend their compass below. Nevertheless, very beautiful effects result from doubling, in the octave below, the high notes of the B♭ clarinet, by a bass clarinet. It is written, like other clarinets, on the G clef:—

Bass Clarinet in B♭.



Effect in real sounds.

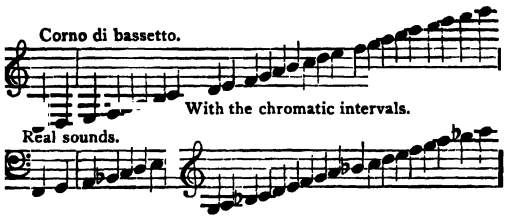


The best notes are the lowest ones; but, owing to the slowness of the vibrations, they should not be made to follow each other too rapidly.

According to the manner of writing it, and the talent of the performer, this instrument may borrow that wild quality of tone which distinguishes the bass notes of the ordinary clarinet, or that calm, solemn, and sacerdotal accent belonging to certain registers of the organ.

THE CORNO DI BASSETTO

Would not otherwise differ from the alto clarinet in F (*low*) than by the little brass bell mouth which elongates its lower extremity, were it not that it has besides the faculty of descending chromatically as far as the C a third below the lowest note of the clarinet :—



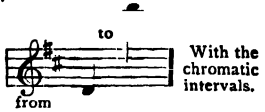
The notes which extend above this compass are very hazardous; nor is there any plausible reason for employing them, since there are high clarinets which yield them without difficulty, and with much more purity.

Like those of the bass-clarinet, the low notes of the corno di bassetto are the finest and the most marked in character.

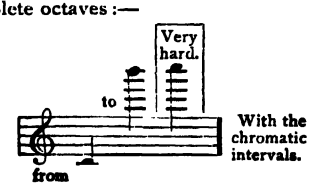
WIND INSTRUMENTS WITHOUT REEDS.

THE FLUTE.

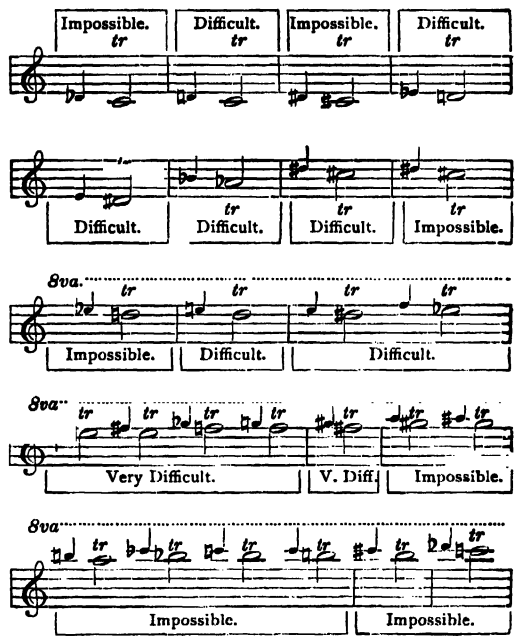
The flute, very few years ago, had only the following compass :—



There have been successively added to this scale two semitones below, and three above, which gives three complete octaves :—



However, as all performers have not the C key, it is better, in the majority of cases, to abstain from these two high notes in writing for the orchestra. The two last high sounds, B♮, C, should not either be employed pianissimo, on account of a certain difficulty which attends their emission, and their rather harsh sound. The high B♭, on the contrary, comes out without trouble; and may be sustained as piano as desired, without the least danger. The number of notes on which shakes may be made, were rather restricted in the old flute; but, thanks to the keys added to the modern one, the major and minor shake is practicable upon a large portion of its chromatic scale :—



With the flutes constructed upon Boëhm's method, shakes are practicable on the notes of the very extreme upper part of the scale; and from the D♭ below up to the highest C; moreover, they are incomparably more true of intonation.

The flute is the most *agile* of all the wind instruments; it is equally suited to rapid passages (diatonic or chromatic) slurred or detached, to arpeggios, and even to very extended passages.

Also, to iterated notes, like those played staccato on the violin; which are obtained by *double-tonguing*.

The keys of D, G, C, F, A, E♮, B♭, E♭, and their relative minors, are the favorite keys of the ordinary flute; the others are greatly more difficult. A flute of Boëhm's, on the contrary, can be played in D♭, almost as easily as in D.

The sound of this instrument is sweet in the medium, rather piercing in the high notes, and very characteristic in the low ones. The quality of tone of the medium, and that of the high portion, has not a very special or decided expression. They may be employed in melodies, or accents of varied character. It should seem then, that the flute is an instrument well-nigh devoid of expression, which may be introduced anywhere and everywhere, on account of its facility in executing groups of rapid notes, and in sustaining high sounds useful in the orchestra for adding fulness to the upper harmonies. Generally speaking, this is true; nevertheless, on studying the instrument carefully, there may be discovered an expression peculiar to it, and an aptitude for rendering certain sentiments, in which no other instrument can compete with it. If, for instance, it were requisite to give to a sad air, an accent of desolation, but of humility and resignation at the same time, the feeble sounds of the flute's medium, in the keys of C minor and D minor especially, would certainly produce the desired effect.

An effect remarkable for its sweetness, is that of two flutes playing in the medium successions of thirds in E♭ or in A♭—both keys extremely favorable to the velvet sounds of this instrument.

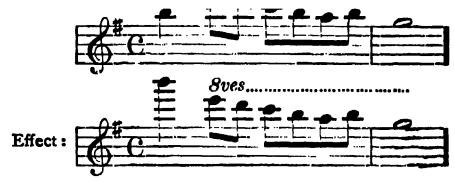
The low sounds of the flute are seldom, or else ill employed by the majority of composers. Weber, in numerous passages of the *Freyschutz*, and, before him, Gluck, in the religious march in *Alceste*, have nevertheless shown what may be done with it in harmonies imbued with seriousness and thought. These bass notes,—as I have already said,—mingle admirably with the low sounds of corni inglesi and clarinets; they give the softened shade of a dark coloring.

In general, the modern masters keep their flutes too constantly in the high range. Hence, it results that they predominate, instead of blending with the whole.

Flutes form a family of themselves—like hautboys and clarinets; and are quite as numerous. The large flute—of which mention has just been made—is the most used. A charming sonorousness is obtained from the association of a single flute above, with four violins, sustaining a high harmony in five parts. Notwithstanding the prevailing custom,—for which there is reason, however—which always gives to the first flute the highest notes of the harmony, there are many occasions, in which a contrary plan might be pursued with success.

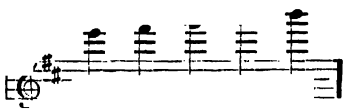
THE PICCOLO FLUTE.

It is an octave higher than the preceding:—

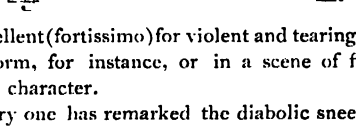


It has the same compass, always excepting the double high C, which comes out with great difficulty, and with a sound almost insufferable; so that it should never be written. The high B♮, is already of exceeding hardness, and can only be employed in a fortissimo of the whole orchestra.

Piccolo flutes are strangely abused now-a-days—as is the case with all instruments whose vibrations thrill, pierce, or flash forth. In pieces of a joyous character, the sounds of the second octave, from

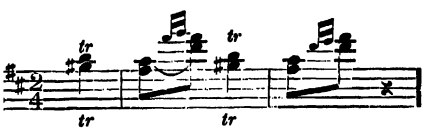


may be very suitable, in all their gradations; while the upper notes,—



are excellent (fortissimo) for violent and tearing effects: in a storm, for instance, or in a scene of fierce or infernal character.

Every one has remarked the diabolic sneer of the two piccolo flutes in thirds, in the drinking song of the *Freyschutz*. It is one of Weber's happiest orchestral inventions:—



When this instrument is employed in doubling in triple octave the air of a baritone, or casting its squeaking voice into the midst of a religious harmony, or strengthening and sharpening—for the sake of the

noise only—the high part of the orchestra, I cannot help feeling this mode of instrumentation to be of a platitude and stupidity worthy, generally, of the musical style to which it belongs.

The piccolo flute may have a very happy effect in soft passages; and it is mere prejudice to think that it should only be played loud. Sometimes it serves to continue the high scale of the large flute.

In military music advantageous use is made of three other flutes, which might be made very serviceable in ordinary orchestras; these are:—

The tierce flute (said to be in F), of which the C makes E♭, is exactly a minor third above the ordinary flute—from which it differs only in that particular, and in its more crystalline quality of tone.

The minor ninth piccolo flute (said to be in E♭), the C of which makes D♭, is a semitone higher than the *octave piccolo flute*; and it should be similarly treated.

The tenth piccolo flute (said to be in F), of which the C makes E♭; and which we call *tenth piccolo flute in E♭*. It is an octave above the minor third flute, and a tenth above the ordinary flute.

It should not be made to go above the high A, and even this note is excessively piercing, and comes with difficulty.

This completes the low-compassed family of this instrument (which might be made, however, as numerous a family as that of the clarinets, if needful).

Wind Instruments With Key-boards.

THE ORGAN*

Is an instrument with a key-board and pipes of wood and of metal, made to vibrate by means of the wind sent through them from bellows.

The number, lesser or greater, of series of pipes of different kinds and different dimensions possessed by an organ, gives it a proportional variety of *stops*, by means of which the organist can change the quality of tone, the power of sound, and the compass of the instrument.

They call the *draw-stop* that mechanism by means of which the organist makes such and such a stop speak.

The compass of the instrument is indefinite; it varies with its dimension,—which is ordinarily designated by the number of feet length that its largest pipe measures, forming the lowest note of the key-board. Thus, they say:—an organ of thirty-two feet, of sixteen, of eight, or of four feet.

An instrument which possesses, with the lowest stop—called *open flute of thirty-two feet*—an open flute of *sixteen feet*, an open flute of *eight feet*, a Prestent, or open flute of *four feet*, and the Principal which sounds the octave above the preceding, has the immense compass of eight octaves, with all the chromatic intervals.

A large organ generally possesses five key-boards, one above another.

There is a key-board placed in such a manner as to be put in action by the feet of the performer; and for this reason, it is called the pedal key-board. This is dedicated to the lowest notes of the organ. It has only the two octaves at the lower end, and often even lacks certain intervals.

The different stops imitate tolerably well in their quality of tone, those instruments whose names they bear.

The fingering of the organ is the same as that of the pianoforte,—with this difference—that the emission of the sounds being less instantaneous, such rapid successions cannot be executed as on the piano-forte: the mechanism of the key-board, moreover, obliging the organist to press his fingers more upon each key. This instrument possesses the power of sustaining the sounds as long as may be desired: it is therefore more suited than any other to the *bound* style; that is to say, to that in which the harmony makes the most frequent use of suspensions and prolongations, and of oblique movement. Music for the organ is sometimes written upon three lines; the two upper ones for the hands, and the under one for the pedal key-board.

The organ seems able—like the pianoforte, and even still better—to present itself in the instrumental hierarchy, under two aspects:—as an instrument belonging to the orchestra, or as being in itself a complete and independent orchestra. It is doubtless possible to blend the organ with the divers constituent elements of the orchestra; and it has even been many times done. Moreover, it should be felt that there seems to exist between these two musical powers a secret antipathy. Therefore, on almost all these occasions where this singular connection is attempted, either the organ much predominates over the orchestra, or the orchestra having been raised to an immoderate degree of influence, almost eclipses his adversary.

The soft stops of the organ seem alone suitable for accompanying the voice. As for determining the

*[What is here said upon the organ refers to Continental organs and therefore applies but partially to the organ in this country.—*Translator.*]*

manner in which the organ should be individually treated — considered as a complete orchestra in itself — this is not the place for us to do so; but merely a careful study of what is the best mode of making it conduce to musical effect in its association. The knowledge of the organ, the art of choosing its different stops, of contrasting them one with the other, constitutes the talent of the organist,— supposing him to be, according to custom, an extempore player. In the contrary case, — that is to say, considered merely as a simple performer having to execute a written work, — he should scrupulously conform to the composer's instructions; who, accordingly, is bound to know the special resources of the instrument he writes for, and employ them judiciously. But these resources are so vast and so numerous, that the composer will never be well acquainted with them, — as it appears to me, — unless he be himself an accomplished organist.

Brass Instruments With Mouth-Pieces.

THE HORN.

This instrument, possessing a large number of moveable crooks, which render its pitch more or less low, and more or less high, — its compass cannot be precisely stated, without at the same time knowing the kind of horn in question. It is, in fact, easier to produce high sounds than low sounds on horns of a low key; excepting however, the keys of A, B♭, and C (low), the extreme length of their tubes rendering the emission of high notes very difficult. It is easier, on the contrary, to give low notes than high notes, on horns whose keys are high. Moreover, certain horn-players, using a large mouth-piece, and being well-practised in giving low sounds, cannot bring forth the higher ones; while others, who use a narrow mouth-piece, and have accustomed themselves to give forth the high notes, cannot produce the lower ones.

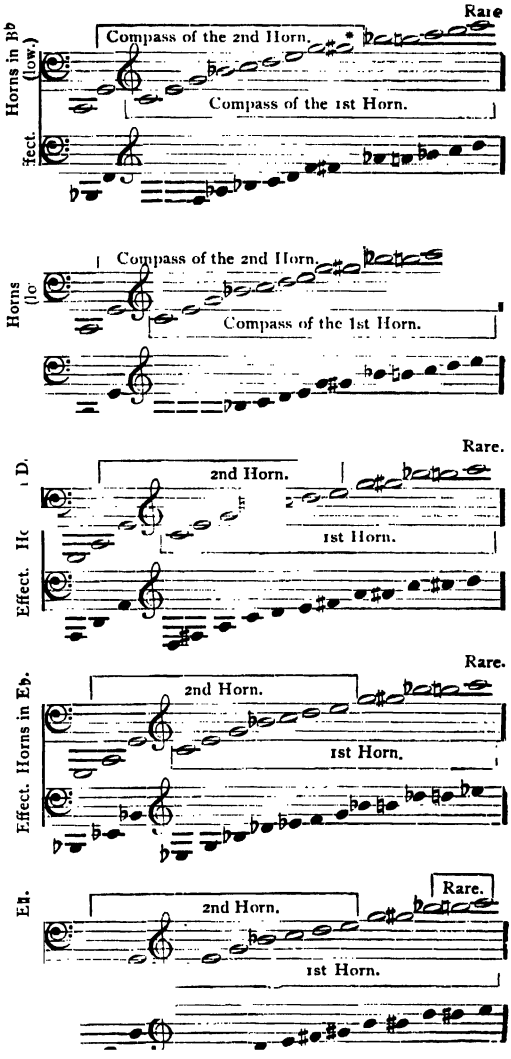
There is then a particular compass for each key of the instrument, and likewise two other particular compasses belonging to performers who play the high part (that of the first horn), and the low part (that of the second horn).

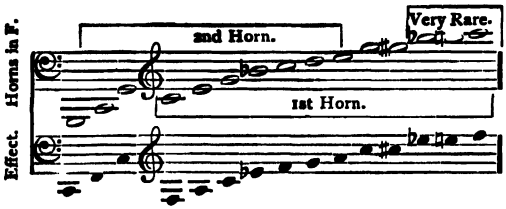
The horn is written on the G clef, and on the F clef; with this particularity established by custom, that he G clef is considered as being lower by an octave han it really is. The subjoined examples will make this understood.

All horns, with the exception of the horn in C above, are transposing instruments.

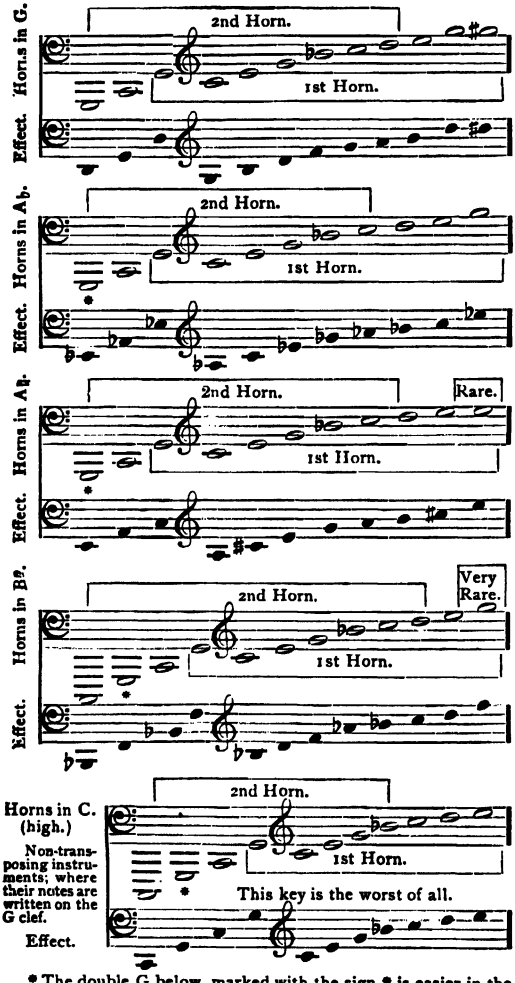
They have two kinds of sounds of very different character; *open* sounds, which are almost all the natural resonance of the harmonic divisions of the instrument's tube, and come out without other assistance than that of the lips and breath of the player, and *closed* sounds, which are obtained by closing more or less the bell with the hand.

First, here is the table of *open* sounds on the different first and second horns: —





The open G♯ cannot be so easily played as the G♮; but it comes out very well if it be preceded by a neighboring note like G♮, or F♯, or A. It is a little too high.

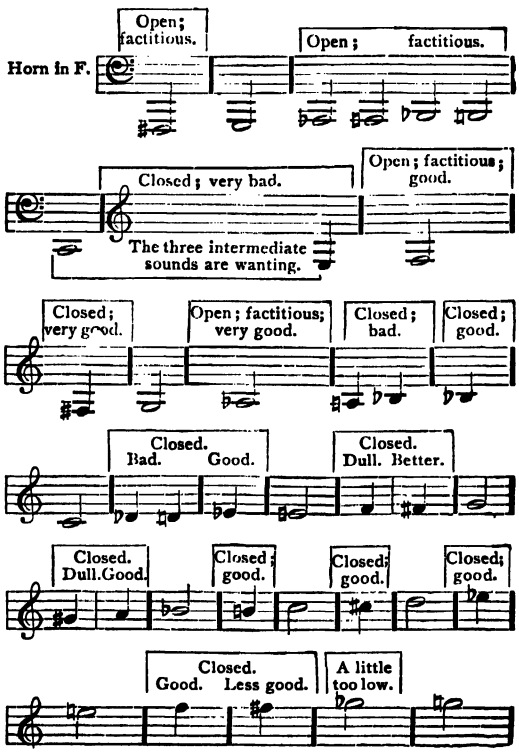


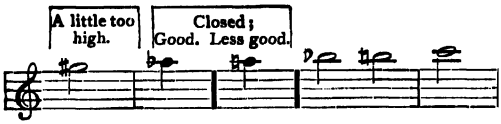
* The double G below, marked with the sign * is easier in the higher keys; but is bad and uncertain in most other keys generally.

The family of horns is complete; there are horn. in *all keys*, although it is generally thought otherwise Those which appear to be wanting in the chromatic scale are obtained by means of a lengthened piece which lowers the instrument a semitone. Thus, we have, in fact, formed of all pieces, only horns in B♭ (low), in C, in D, in E♭, in E♮, in F, in G, in A♭, in A♮ (high), in B♭ (high), and in C (high); but by adding lengthening pieces to the keys of B♭ and C (low), A♮ is obtained, and B♮ (low); and, by the same means, the key of D is transformed into D♭ (or C♯), the key of G into G♭ (or F♯), and the key of C (high) into B♮ (high) (or C♭); this last key is obtained by merely drawing the slide of the horn in C (high).

By uniting the compass of the first horn with that of the second, and by making the factitious open notes, or closed notes, succeed the natural open notes,—this is the immense chromatic scale thence resulting,—ascending from low to high:—

GENERAL COMPASS OF THE HORN.

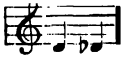
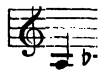




It is here the opportunity to point out that rapid successions are the more difficult on the horn, according as its key is lower; it is, moreover, a general law, which should be observed in all instruments — that, since the low sounds are those which result from specified numbers of slow vibrations, so, the sonorous body should have the requisite time for the production of sound.

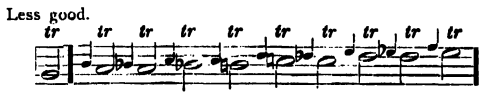
Care should be taken, as much as possible, in employing closed sounds, particularly in the orchestra, to intersperse them with open sounds; and not to skip from one closed note to another; or, at least, from a bad closed note to another equally bad.

When closed sounds are not written for a particular effect, those at least should be avoided, the sonorousness of which is too weak and too dissimilar to the other sounds of the horn.

Of these, are the D ♮ and the D ♭ below the stave,  ; the A ♮ and the low B ♭, 

and the A ♭ of the medium  ; which should never be employed as notes of filling up; but only, in order to produce effects inherent from their dull, hoarse, and wild quality of tone.

Major and minor shakes are practicable on the horn; but in a small portion of the scale only. These are the best.



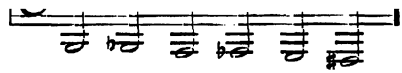
Horns are generally written — whatever may be their key, and that of the orchestra — without sharps or flats at the clef. When the horn is treated as a reciting part, however, it is better, if the instrument be not in the same key as the orchestra, to indicate at the clef the sharps or flats required by the key: but it should always be so managed, that very few are employed.

The horn is a noble and melancholy instrument; the expression of its quality of tone, and of its sonorousness, are, nevertheless, not those which unfit it for figuring in any kind of piece. It blends easily with the general harmony; and the composer — even the least skilful — may, if he choose, either make it play an important part, or a useful but subordinate one.

THE HORN WITH THREE PISTONS; AND THE HORN WITH VALVES.

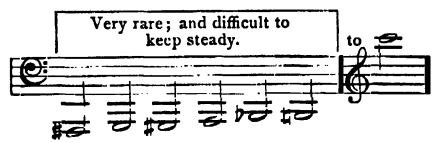
This instrument can make all its notes open notes, by means of a mechanism of which the action consists in changing instantaneously the key of the horn. Thus the use of such and such a piston, transforms the F horn into an E horn; or an E ♭ horn into a D horn, etc.; whence it follows that the open notes of one key becoming added to those of other keys, the complete chromatic scale is obtained in open sounds. The use of the three pistons has moreover the effect of adding to the scale of the instrument *six semitones* below its lowest natural sound. Thus, in taking this C, 

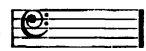
as the extreme point of the compass of the horn below, the pistons give it the following notes in addition: —



It is the same with all the brass instruments, — trumpets, cornets, bugles, and trombones, — to which the mechanism of the pistons is applied.

The compass of the horn with three pistons, in a mixed key like the key of E ♭ would therefore be this:-

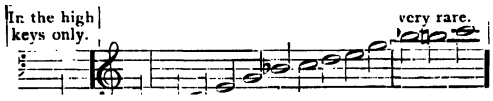


This system especially offers advantages for the second horns, owing to the considerable lapses which it fills up between its natural low notes, commencing from the last low C ascending,  ; but the quality of tone of the horn with pistons differs a little from that of the ordinary horn, — which it cannot therefore entirely replace. I think it should be treated almost like an instrument apart, — particularly fitted for giving good basses, vibrant and energetic; not possessing, however, so much force as the low sounds of the tenor trombone, to which its own bear much resemblance. It can also render a melody well, especially if it lies principally on the medium notes.

The best keys to use for the horn with pistons — the only ones indeed which leave nothing to desire on the score of correctness in tune — are the intermediate keys. Thus, the horns in E ♮, F, G, and A ♭, are much preferable to the others.

THE TRUMPET.

Its compass is nearly the same as that of the horn, of which it possesses (in the upper octave) all the natural open notes; it is written on the G clef:—



It is well to avoid the employment of the low C, on trumpets lower than the trumpet in F.

There are trumpets formed of all kinds, in B ♭, in C, in D, in E ♭, in E ♮, in F, and in G; very rarely in high A ♭. By means of the lengthening piece, of which mention was made in speaking of horns, and which lowers the instrument a half tone, trumpets are produced in A, in B ♮, in D ♭ (or C ♯), in G ♭ (or F ♯).

The low trumpets — like all other instruments of this kind — should avoid the lowest note; while the high trumpets cannot reach the most acute sounds.

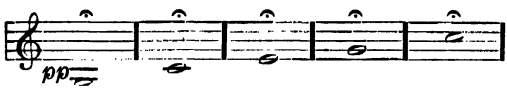
The shake is hardly practicable in general on the trumpet; and I think it should be abstained from in the orchestra.

What I have said with regard to different keys on the horn, and of the way of using them by means of interchange, is applicable in all respects to the trumpet.

Notwithstanding the routine generally pursued, charming *piano* effects are to be obtained from trumpets; Gluck was one of the first to prove it, by his long holding-note of the two trumpets united pianissimo on the dominant, and since then, Beethoven and Weber have drawn great advantage therefrom.

In order that these notes may be produced with certainty, they should, in general, be taken in the medium, and not succeed each other too rapidly.

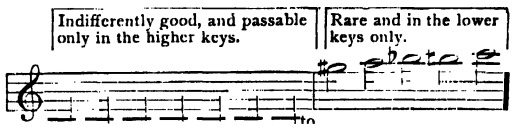
The five following may be taken and sustained pianissimo:



The quality of tone of the trumpet is noble and brilliant; it suits with warlike ideas, with cries of fury and of vengeance, as with songs of triumph; it lends itself to the expression of all energetic, lofty, and grand sentiments, and to the majority of tragic accents. It may even figure in a jocund piece; provided the joy assume a character of impulse or of pomp and grandeur.

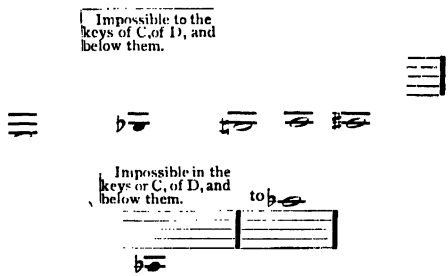
Trumpets with pistons and with cylinders have the advantage of being able, like the horns with pistons, to give all the intervals of the chromatic scale. They have lost nothing of the quality of the ordinary trumpet, by the super-addition of these facilities; and their correctness of intonation is satisfactory.

The general compass of trumpets with pistons and with cylinders is this:—

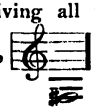


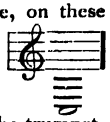
Major and minor shakes that are feasible on the trumpet with cylinders, are the same as those of the cornet with three pistons. (See farther on, the table of shakes for this instrument.)

Valved trumpets,—called so on account of their movable valve similar to that of the trombone, and which is moved by the right hand,— are, for this reason, fit for producing the truest intervals. Their sound is precisely the same as that of simple trumpets; and their compass is this:—



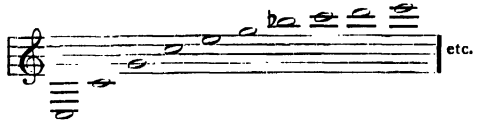
THE CORNET WITH THREE PISTONS; AND WITH CYLINDERS.

Its compass is about two octaves and two or three notes. The mechanism of pistons with which it is furnished, allows of its giving all the chromatic degrees, as far as the low F ♯,  ; nevertheless

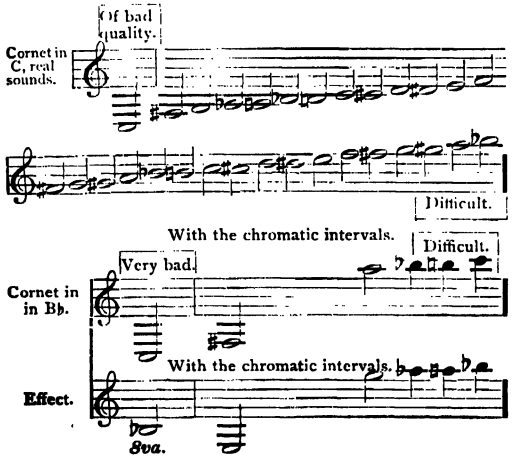
this note, and the two or three that precede it in descending,—such as A, A♭, G, —are hardly practicable but on high cornets alone. It is possible, on these high cornets, to get out the double C below  the first note of the natural resonance of the trumpet, as will presently be seen; but it is a note of very hazardous utterance, of very bad quality, and of very dubious utility.

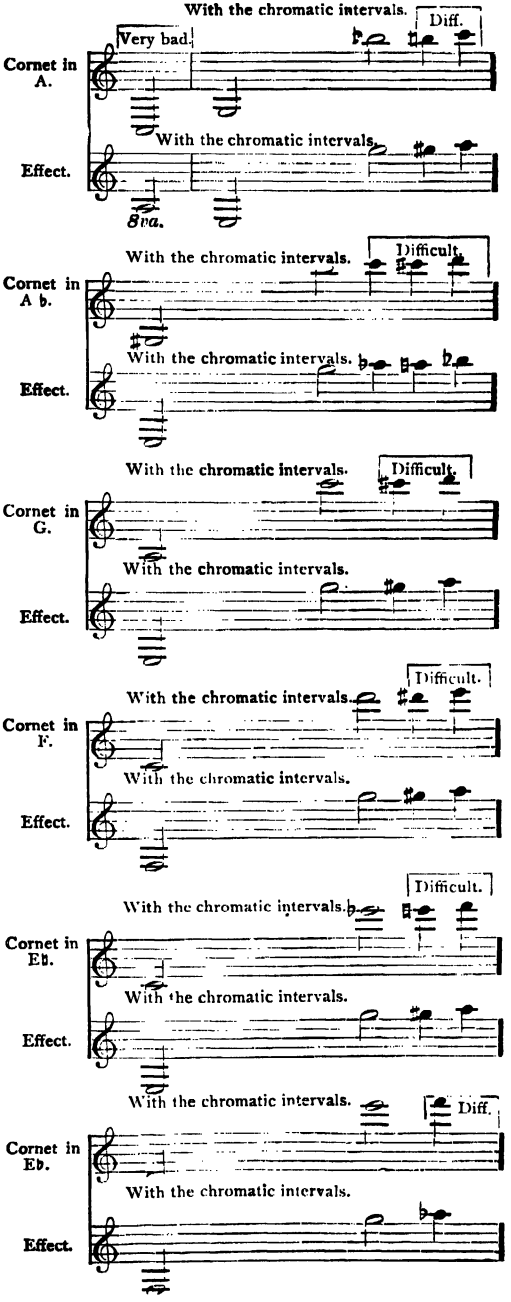
There are cornets in C, in B♭, in A, in A♭, in G, in F, in E ♮, in E♭, and in D. Besides, the low keys, —such as those of G, F, E, and D,— are generally of indifferent quality, and wanting in correctness of intonation. The best cornets — those, I think, which should be almost exclusively used, — are the cornets in A♮, A♮, and B♭. The highest of all, the cornet in *C*, is rather hard to play.

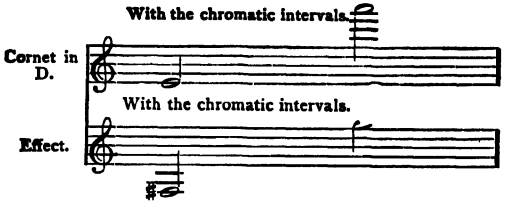
This is the compass that may be assigned to the different keys of the cornet à piston; certain players obtain some very dangerous notes still beyond, both above and below, — but these shall not be reckoned. It is written on the G clef. The natural resonance of its tube — shorter than that of trumpets — gives the following notes: —

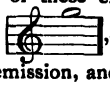
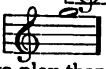
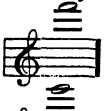
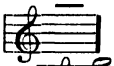
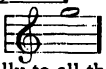


And here is the chromatic compass given by the pistons, in the different keys: —

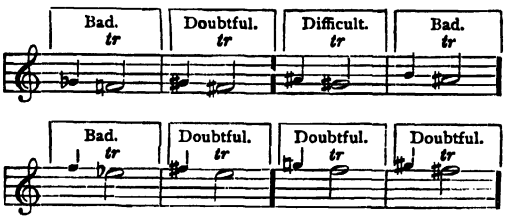






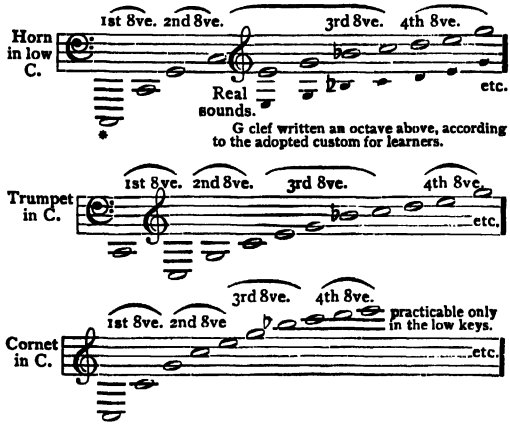
An opportunity occurs here for pointing out with regard to the last high notes of these examples,— which all produce the same G,  ,—that they are of much less hazardous emission, and of much better sonorousness in the high keys than in the low ones. Thus the high B♭ of the cornet in A,  the high A of the cornet in B♭,  and the high G of the cornet in C,  are incomparably better and more easy to play than the high F of the cornet in D,  or than the high E of the cornet in E♭.  And yet all these notes sound the same G.  Moreover, this observation applies equally to all the brass instruments.

The larger part of major and minor shakes are practicable and of good effect, on this part of the compass of the high cornets à pistons, — such as those in A, B♭, and C.

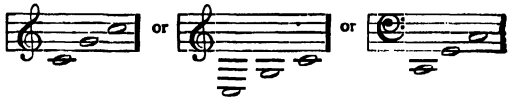


Here is now the comparative table of the relations established between the pitches of the various keys, of horns, trumpets, and cornets.

The first low sound of the cornet in C,— as already seen, — is an octave above that of the trumpet in C; just as the first low sound of this trumpet is an octave above that of the horn in (low) C. The natural notes of the horn (those which result from the resonance of the tube) thus reproduce themselves an octave above, and in the same order, in the trumpet; while those of the trumpet also all reproduce themselves an octave above, and in the same order, in the cornet, if the player's lips had the necessary force to bring out the highest ones; which is not the case.

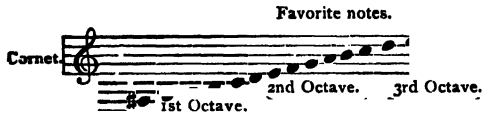


It will be seen by the above,— and it is highly important to be remembered, — that the portion of the scale of the sounds of a brass instrument, where it can naturally produce (without pistons) these three notes only :—

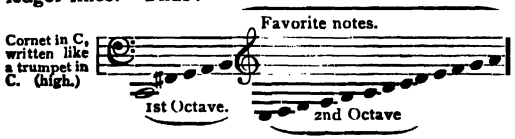


is always its second octave going from low to high. Therefore, cornets à pistons have their favorite notes; especially in this second octave. By considering the cornets in A, in B♭, and in C, as trumpets an octave above the trumpets in A, in B♭, and in C, they might be thus written; but this has been judiciously avoided, and cornets have been written in their place on the musical scale, by making their lowest sound proceed from an octave above the lowest sound of the trumpet. The best notes of these cornets are within the compass, and in the vicinity of their second octave :—

* This note exists; it is really the first low one of the horns; but in all the low keys it is so detestable, and even so indistinct, that we have abstained from giving it a place in the scale of the sounds of the horn in (low) C; and for even greater reason, is that of the key of (low) B♭.



If cornets had been written as trumpets, these notes would always have been below the stave, and would have involved the constant employment of ledger lines. Thus: —



This inconvenient method of writing cornets à pistons is nevertheless adopted in Prussian military music; and of this it is well to be aware.

Now, there remains to consider (the key of C being taken as the point of departure, in horns, trumpets, and cornets), that the changing keys of the cornet proceed by elongation; and therefore, *by becoming lower and lower:* and this is why, in displaying their scale, we have commenced by the highest keys; whereas, those of trumpets and horns (with the exception of three, — those in B♮, in B♭, and in low A, which are lower than the key of C) proceed by shortening, and consequently by becoming higher and higher.

DIFFERENT KEYS OF THE CORNET A PISTONS.

1st. C (*typical key.*)
2nd. B♮.
3rd. B♭.
4th. A.
5th. A♭.
6th. G.
7th. G♭.
8th. F.
9th. E♮.
10th. E♭.
11th. D.

Descending

DIFFERENT KEYS OF THE TRUMPET.

Ascending keys.
A♭ (*rare.*)
G♮.
G♭.
F.
E♮.
E♭.
D♮.
D♭.
C (*typical.*)
B♮.
B♭.
A (*very rare.*)

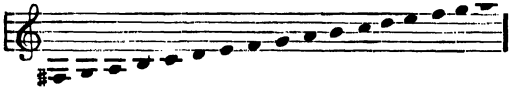
Descending

DIFFERENT KEYS OF THE HORN.

Ascending keys.
C high.
B♮ high.
B♭ high.
A♮ high.
A♭.
G♮.
G♭.
F.
E♮.
E♭.
D♮.
D♭.
C (*typical*).
B♮.
B♭.
A (*very rare.*)

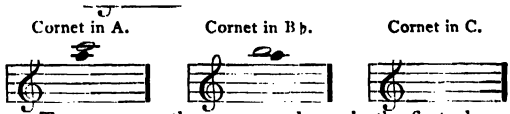
Now we must observe what affinities exist between horns, trumpets, and cornets, and the respective position they occupy on the scale of sounds.

I will here add, that trumpets with pistons, or with cylinders, having — as I have just said — their best notes within the compass, and in the vicinity of their third octave (*which is found in unison with that of the second of the cornet*), passages written for cornets à pistons in A, in B, and in C, within this compass: —

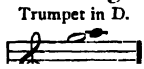


will necessarily be executable on trumpets in A, in B, and in C, without causing any change. This allows of replacing, without disadvantage, cornets by trumpets with cylinders, in orchestras like German ones, which have no cornets.

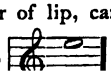
Cornets in A, in B, and in C, have, — minutely analyzed, — less compass than trumpets in A, in B, and in C; since they can scarcely reach above the A real,

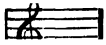
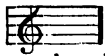


Trumpets, on the contrary, have, in the first place, several more notes below — however poor they may be; and, moreover, produce more easily than cornets, this same A  in the keys of D:—



And in F:— 

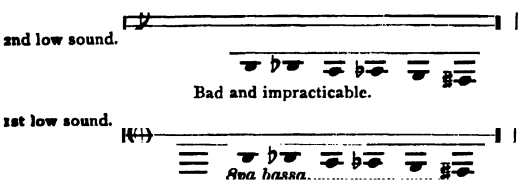
Some artists, gifted with vigor of lip, can even sound the E of the trumpet in G,  which

produces B,  and the G of the trumpet in  which produces C,  ; but merely in passing, and if these notes be adroitly led up to.

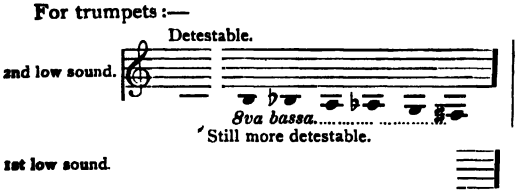
But performers capable of reaching these extreme notes are rare; and they should not, in writing, be too much counted upon.

Trumpets, having a narrow tube, a small mouth-piece, and a bell of little extent, have more facility in attacking the high notes. The tube of cornets, on the contrary, being rather thick, and almost conical, their bell and their mouth-piece also, being rather larger, the mastery of low notes becomes more easy to them than that of high notes, and their tone acquires the peculiar quality which distinguishes that of trumpets. This is the cause of that difference.

Before proceeding to the examination of the expressive character of the cornet à pistons, it is not unneedful to repeat here again what I have said in speaking of the horn with pistons, respecting the action of the three cylinders, or pistons, adapted to brass instruments generally. Not only do these three cylinders give to these instruments the chromatic scale (above their first octave), thereby supplying all the gaps which separate their natural notes from each other, but they also add six chromatic notes below the two lowest sounds. Thus, for cornets: —

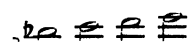


For trumpets: —

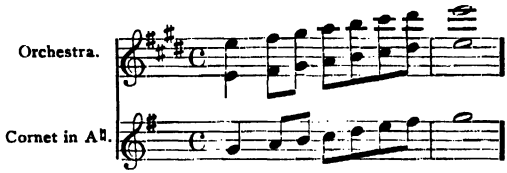


This first low C is already so indistinct and difficult to sustain, that the notes added below it for the pistons become, — as may be imagined, — absolutely impracticable. It is the same for the horns.

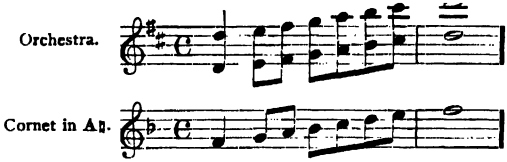
Although the cornet possesses all the degrees of the chromatic scale, the choice of the change of key is not immaterial; it is always better to take that which offers the means of employing the most natural notes; — it is scarcely necessary here to repeat that the natural notes are those which come out without the aid of the pistons, by the sole effect of the resonance of the tube of the instrument; such as, —



— and which bears few or no sharps or flats at the signature. When the orchestra is playing in E♯, for instance, — as the cornet in E♯ is one of the least good, — the cornet in A♯ should be used, which would then play in G: —



If the orchestra be in D, the cornet in A♯ should still be used; and it would then play in F: —



If the orchestra be in E♭, the cornet in B♭ should be taken, playing with one flat at the signature, — consequently in F, and so on with the rest.

A phrase which might appear tolerable, played on violins, or on wooden wind instruments, would become poor and detestably vulgar, if brought out by the snapping, noisy, bold sound of the cornet à pistons. This danger is obviated if the phrase be of such a nature that it can be played at the same time by one or more trombones; the grand sound of which then covers and ennobles that of the cornet. Employed in harmony, it blends extremely well with the general mass of brass instruments; it serves to complete the chords of the trumpets, and to contribute to the orchestra those diatonic or chromatic groups of notes,

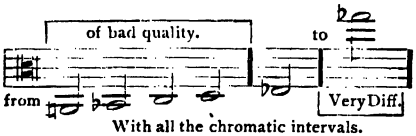
which, on account of their rapidity, suit neither the trombones nor the horns. Cornets à pistons are generally written in two parts,— often each in a different key.

TROMBONES.

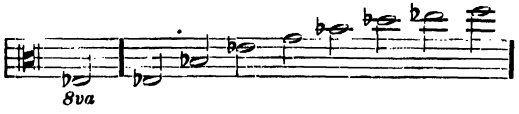
Trombones are instruments with slides, of which the double tube can be lengthened or shortened instantaneously by a simple movement of the player's arm. It may be conceived that these variations of the length of the tube must completely change the key of the instrument, —which is the case. Whence it follows, that trombones, possessing, like all brass instruments, all the notes resulting from the natural resonance of the tube *in all positions*, have thereby a complete chromatic scale, interrupted only at one point below, as will presently be seen.

THE ALTO TROMBONE.

It possesses a compass of more than two octaves and a half; and is written on the C clef, third line;—



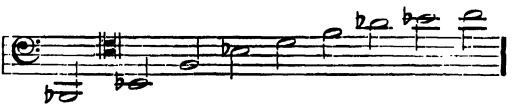
Its quality of tone is rather shrill, compared with that of the deeper trombones. Its lower notes sound somewhat badly. The high sounds, such as B, C, D, E, F, on the contrary, may be very useful. When its slide is closed, by means merely of the lips, the following notes may be obtained: —



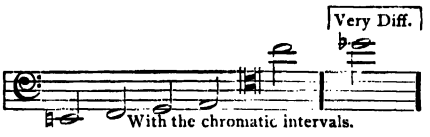
Hence the name of the small trombone, or alto trombone, in E♭.

THE TENOR TROMBONE.

This is, without doubt, the best of them all. It has a full and powerful sonorousness; it can execute passages whose rapidity renders them impracticable on the bass trombone; and its quality of tone is good throughout the whole extent of its scale. It is ordinarily written on the C clef, fourth line; but as it happens in certain orchestras that the three trombone parts are, under three different names, all nevertheless played on three tenor trombones, it follows that they are written, one, on the C clef, third line (like the alto), the second on the C clef, fourth line (like the tenor), and the third on the F clef (like the bass). Its slide being closed, it produces naturally the following notes, which are those of the resonance of all brass tubes in B♭; that is to say, tubes which, — sounded in their totality, — give for first low sound, a B♭:—



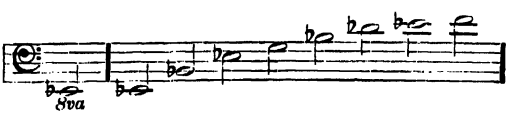
which has occasioned it to be called the trombone in B♯. It is thus at a fourth below the alto trombone; and its compass is this: —



THE BASS TROMBONE

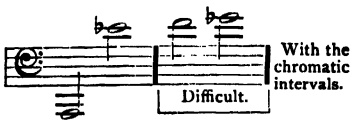
Is only rare on account of the fatigue experienced in playing it, even by the most robust performers. It is the largest and lowest of them all. When employed, it should have sufficiently long rests given to it, that the player may repose; and it should moreover be used with extreme discretion and well-reflected intention.

With the slide closed, it gives the notes,—



It is called the great trombone, or the bass trombone in E♭.

It is consequently an octave lower than the alto trombone, and a fifth below the tenor trombone. It is written on the F clef: —

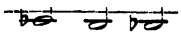


The sound of the bass trombone is majestic, for

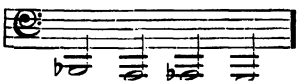
midable, and terrible; and to it belongs of right the lowest part in all masses of brass instruments.

The bass trombone cannot lend itself to rapid movements; the length and size of its tube requires more time to be put in vibration, and it will readily be imagined that its slide, — manœuvered by the aid of a handle which supplies, in certain positions, the length of the arm, — does not admit of great agility.

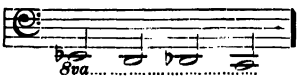
All trombones — commencing from points more or less low — have the same compass, which has been seen to be of two octaves and a sixth. Besides this extensive scale, they also possess — at the extreme depth, and commencing from the first low sound of A (natural resonance of the tube), — three notes, which are enormous and magnificent on the tenor trombone, of indifferent sonorousness on the alto trombone, and terrible on the bass trombone when they can be got out. They are called pedals;



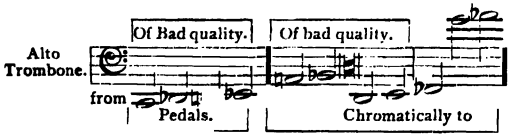
for the alto trombone;

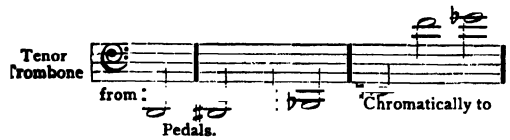


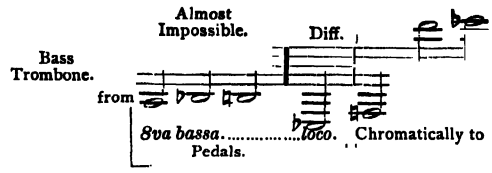
for the tenor trombone; and the bass trombone would have these: —



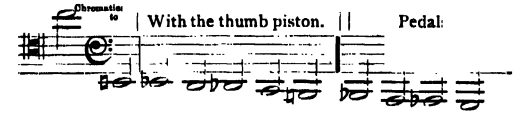
if all performers had the power of bringing them out. These notes, on all the trombones, are isolated from the others, by a gap of an augmented fourth.





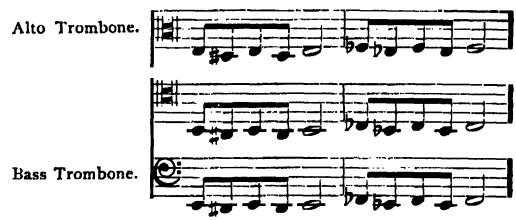


Fortunately, the clever maker, Sax (of Paris) surmounted the difficulty by means of a single piston affixed to the body of the tenor trombone, which piston the performer moves with his thumb, maintaining the entire liberty of his right arm for manipulating the slide; and which, supplying the gap, now gives to the tenor trombone in B♭ this immense compass: —



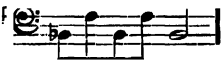
The vibrations of the pedal notes are slow, and require much wind; in order, therefore, to make them come out well, it is necessary to give them a sufficiently long duration, to make them succeed each other slowly, and to intersperse them with rests which will give the player time to take breath.

Another particular, unknown to the majority of composers — yet nevertheless very important to be known — is the difficulty, and even, in certain cases, the impossibility, for trombones to give in sucession, and with any rapidity, the following notes:



The passing from one of these notes to the other, demanding an enormous change in the position of the slide, cannot be effected except in a very moderate movement.

It is equally, and for the same reasons, rather difficult to play at all fast this passage on the tenor trombone: —

It is better to write it reversed; this succession of the notes,  requiring no change of position.

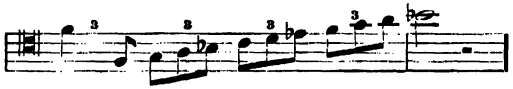
The shake is practicable on trombones, but only on the notes of their upper octave. All the shakes are major, the minor shakes being impracticable.

The trombone possesses, in an eminent degree, both nobleness and grandeur; it has all the deep and powerful accents of high musical poetry, — from the religious accent, calm and imposing, to the wild clamors of the orgy.

The sound of the trombone is so markedly characterized, that it should never be heard but for the production of some special effect; its duty, therefore, is not to strengthen the double basses, with which its quality of tone has no sort of sympathy. Besides, a single trombone in an orchestra seems always more or less out of place. This instrument needs harmony, or, at least, unison with the other members of its family, in order that its various attributes may be completely manifested.

It is difficult to determine with precision the degree of rapidity to which trombones can attain in passages; nevertheless, here is, I believe, what may be said on this point: in a bar of four-time, and in the movement *Allegro moderto*, for instance, a passage of simple quavers (eight notes in a bar) is feasible on the bass trombone:—

The other trombones — alto and tenor — being a little more agile, will execute without much difficulty, passages of quavers in triplets (twelve notes in a bar):



but these are the natural boundaries of their agility; to pass beyond them, is to fall into mess and confusion, —if not into impossibility.

The character of tone in trombones varies according to the degree of loudness with which their sound is emitted. In a *fortissimo*, it is menacing and formidable; particularly, if the three trombones be in unison, or at least, if two of them be in unison, the third being an octave below the two others. Such also is — but still more sublime — the immense shout of the three united trombones.

In simple *forte*, trombones, in three-part harmony, in the medium particularly, have an expression of heroic pomp, of majesty, of loftiness. They then acquire — with increased grandeur, — the expression of trumpets; they no longer menace, they proclaim; they chant instead of roar.

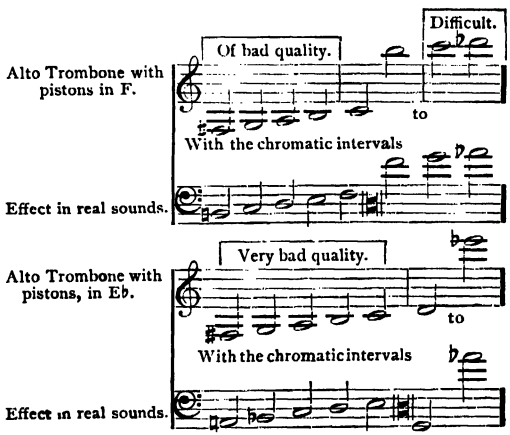
In *mezzo-forte* in the medium, in unison or in harmony with a slow movement, trombones assume a religious character.

The *pianissimo* of trombones applied to harmonies belonging to the minor mode, is gloomy, lugubrious, almost hideous. If, particularly, the chords be brief, and broken by rests, it has the effect of hearing some strange monsters giving utterance, in dim shadow, to howls of ill-suppressed rage.

THE ALTO TROMBONE WITH PISTONS; OR WITH CYLINDERS.

There are alto trombones in E♭, and in F; and it is absolutely requisite to denote for which of these keys the composition is written, since the habit has obtained of treating this trombone as a transposing instrument. It has no slide; and is, in some sort, only a cornet à pistons in E♭, or in F, with rather more sonorousness than the regular cornets.

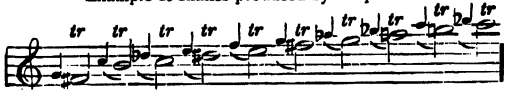
The compass of the alto trombone with pistons is nearly the same as that of the ordinary alto trombone. It is written on the G clef, transposing; as with the cornet à pistons.



The shakes of the alto trombone with a slide, and which the performer makes with the lips only, are practicable on the trombone with pistons. Some of

them may be made also with the pistons; but it should be observed that the minor shakes are the only ones which produce a good effect, and which can be done rapidly. These are the best: —

Example of shakes produced by the pistons.



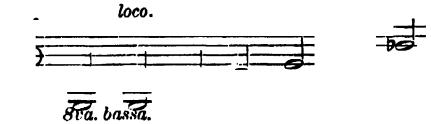
The system of pistons adapted to the trombone give it much agility, but cause it to loose somewhat of its correctness of intonation.

THE BUGLE, OR CLARION.

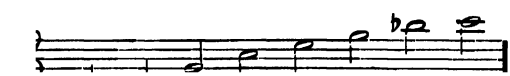
The simple bugle, or clarion, is written on the G clef, like the trumpet; it possesses, in all, eight notes. —

and even the latter, the high C, is only practicable on the deepest bugle; while the low one is of a very bad quality of tone. There are bugles in three keys: in B♭, in C, and in E♭. The flourishes played upon them, lying always exclusively on the three notes of the common chord, are necessarily so monotonous as to be almost wearisome. The quality of this instrument is rather ungraceful; it generally wants nobleness; and it is difficult to play it well in tune. As it can execute no diatonic succession, shakes are necessarily precluded upon it.

The Bugle, being a much shorter instrument than the trumpet, only possesses the notes of the three lower octaves of this latter: —



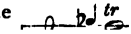
but on account of the small length of its tube, these notes come out an octave higher. That is why it is written —



Thus the bugle, or clarion, in C, is a non-transposing instrument; while the bugles in B♭, and in E♭, on the contrary, are written transposing.

THE KEYED BUGLE.

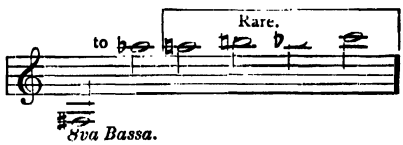
In cavalry music, and even in certain Italian orchestras, bugles with seven keys are found, which traverse chromatically a compass of more than two octaves, beginning from B♮ beneath the stave, up to the C above: —

The keyed bugle can make the  shake upon all the notes of the scale, with the exception of this: —

It does not want for agility, many artists play it in a remarkable way; but its quality does not differ from that of the simple bugle or clarion.

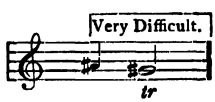
THE BUGLE WITH PISTONS; OR WITH CYLINDERS.

It has a lower compass than the preceding; but this is a slender advantage, for its bass notes are of a very bad quality, and moreover come out easily only upon the small bugle in E♭; the compass of which, consequently is this: —



This instrument is much better than the keyed bugle; it produces a good effect in playing certain melodies of slow movements, or at least moderate movements; its quality presents, for lively or gay phrases, the same inconvenience which we pointed out in the cornets à pistons, that of lacking distinction.

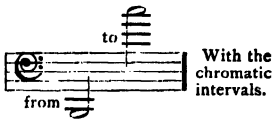
Beginning from the middle E, all the major and minor shakes are good upon the bugle with pistons, excepting this: —



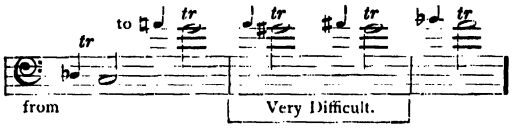
THE BASS OPHICLEIDE.

Ophicleides, are the altos and basses of the bugle. The bass ophicleide offers great resources for maintaining the low part of masses of harmony; and it is

also the most used. It is written on the F clef, and its compass is three octaves and one note: —



In the hands of a skilful artist, the major and minor shakes are possible on this part of the scale; as proved by M. Caussinus in the excellent work which he has just published:—



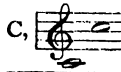
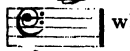
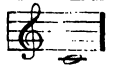
Passages of a certain rapidity, diatonic, and even chromatic, are practicable in the three upper octaves of the ophicleide; but are excessively difficult below, where they moreover produce no other than a detestable effect.

Staccato passages are much less easy, — nay, almost impossible — in a quick movement. There are bass ophicleides in two keys, in C and B♭; and there are some even made at present in A♭. These latter will be of great utility, on account of the extreme depth of their lower notes, which form a unison with the three-stringed double basses. The ophicleide in B♭, has already rendered eminent service in this respect. They are each of them written, transposing, like all transposing instruments: —

The first low G is, as will be seen, the unison of this  on the double-bass.

The quality of these low sounds is rude; but it does wonders — in certain cases — beneath masses of brass instruments. The very high notes have a wild character, of which perhaps sufficient advantages have not yet been made. The medium too much recalls the sounds of the cathedral serpent.* I think it should be rarely allowed to be heard much displayed.

THE ALTO OPHICLEIDE.

There are alto ophicleides in F and E♭, and their compass is the same as that of the bass ophicleides; they are both written on the G clef, like horns; and, in the same way as for horns, this clef represents for them the octave below the written note. Thus, this C,  corresponds with that of the F clef,  which in reality sounds that of the G clef, 

They are employed in some kinds of military music to fill up the harmony; and even to execute certain phrases of melody: but their quality is generally disagreeable, and not noble, and they want precision in tune; hence the almost complete neglect into which these instruments have now fallen.

THE DOUBLE-BASS OPHICLEIDE.

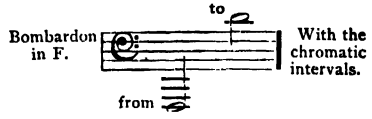
The double-bass ophicleides, or monster ophicleides, are very little known. They may be useful in very large orchestras; but, until now, no one has been willing to play them in Paris. They require an amount of breath which would exhaust the lungs of the most robust man. They are in F and E♭, a fifth below the bass ophicleides in C and in B♭; and an octave below the alto ophicleides in F and in E♭. They must not be made to go higher than the F.

It is needless to state that shakes and rapid passages are incompatible with the nature of such instruments.

THE BOMBARDON.

This is a low instrument, without keys, and with three cylinders; the quality of which differs but little from that of the ophicleide.

Its compass is this:



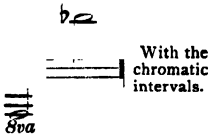
It possesses five notes still beyond, both above and below; but they are of uncertain emission, and are better avoided.

This instrument — whose sound is very powerful — can execute only passages of moderate movement. Florid passages and shakes are precluded. It produces a good effect in large orchestras where wind instruments predominate. Its tube gives naturally the notes of the chord of F, which is why it is called in F; nevertheless, the custom is, in Germany, to treat it like the trombone, as a *non-transposing*, and to write for it only real sounds.

* An instrument much used in French churches.

THE BASS-TUBA (THE DOUBLE-BASS OF HARMONY.)

The bass-tuba possesses an immense advantage over all other low wind instruments. Its quality of tone, incomparably more noble than that of ophicleides, bombardons, and serpents, has something of the vibration and quality of tone of trombones. It has less agility than ophicleides; but its sonorousness is more powerful than theirs, and its low compass is *the largest existing in the orchestra*. Its tube gives the notes of the chord of F; nevertheless, Adolphe Sax now makes bass-tubas in E♭. Notwithstanding this difference, they are all treated in Germany as *non-transposing* instruments. The *bass-tuba* has five cylinders, and its compass is four octaves.



The bass tuba can still produce some few notes beyond above, and even below, by aid of the cylinder mechanism. Those of the extreme high are very dangerous; while those of the extreme low are scarcely to be heard; the C, the B♭, and the A, are only to be distinguished by doubling them in the octave above with another bass-tuba part; this both imparting to them and acquiring from them additional sonorousness.

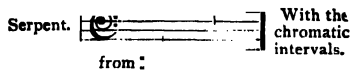
It must be well understood, that this instrument is not better adapted than the bombardon to shakes and rapid passages. It can play certain measured melodies. An idea can hardly be formed of the effect produced in grand military harmonies by a mass of bass-tubas. It has at once something of the trombone and of the organ.

INSTRUMENTS WITH A MOUTH-PIECE, AND OF WOOD.

THE SERPENT

Is a wooden instrument covered with leather, and having a mouth-piece; it has the same compass as the ophicleide, with rather more agility, precision in tune, and sonorousness. These are three notes,—

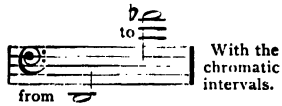
much more powerful than the others; hence those startling inequalities of tone, which its players should apply themselves with all care to overcome as much as possible. The serpent is in B♭; consequently, it must be written a whole tone above the real sound, like the ophicleide in B♭.



The quality of tone is essentially barbarous. Its frigid and abominable blaring seems to invest with a kind of lugubrious poetry those words expressive of all the horrors of death, and the vengeance of a jealous God. It would be no less well placed in profane compositions, where ideas of this nature had to be expressed; but then only. It mingles ill, moreover, with the other qualites of orchestra and voices; and as forming the bass to a mass of wind instruments, the bass-tuba, and even the ophicleide, are greatly preferable.

THE RUSSIAN BASSOON

Is a low instrument of the serpent kind, whose quality of tone has nothing very characteristic, whose sounds lack steadiness, and consequently precision in tune; and which, in my opinion, might be withdrawn from the family of wind instruments without the smallest injury to Art. Its general compass is



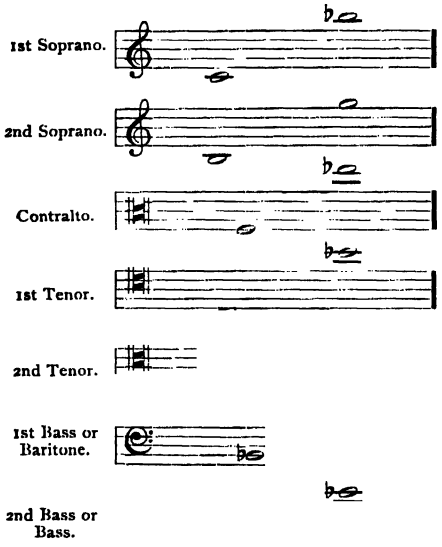
The best notes of the Russian bassoon are D and E♭. Only detestable effects are to be obtained from shakes on this instrument. Russian bassoons are found in military bands, but it is to be hoped that they will no longer figure there.

VOICES.

Voices are naturally divided under two great heads, — male voices, or low voices; and female voices, or high voices. These latter comprise not only the voices of women, but also the voices of children of both sexes, and the voices of artificial sopranos. Both the one and the other are again subdivided into two distinct species, which generally received theory considers as being of the same compass, and differing only among themselves in degree of depth. According to established custom in all the schools of

Italy and Germany, the lowest man's voice (the bass) will reach from F below the stave (F clef) up to D and E♭ above; and the highest man's voice (the tenor) placed a fifth above the preceding, will consequently go from the C below the stave (C clef on fourth line) up to the A and B♭ above. The voices of women and children will, in the same order, range precisely an octave higher than the two men's voices, dividing themselves under the names of contralto and soprano; the first corresponding with the bass voice, the second with the tenor voice. Thus, the contralto will go, like the bass, from the low F to the high E♭ (nearly two octaves); and the soprano, like the tenor, from the low C to the high B♭.

Here is the most sonorous compass of the seven different voices to be found in most great choral bodies. I abstain from indicating the extreme upper or lower notes possessed by certain individuals, which should only be written exceptionally: —



Choruses of women in three parts have an enchanting effect in pieces of a tender and religious character; they are then disposed in the order of three voices just stated, — first soprano, second soprano, and third soprano, or contralto.

Sometimes a tenor part is given as bass to these three-part female voices; but it can only be in a case where the object is to produce a soft and calm effect, such a chorus having naturally but little energy. Choruses composed of men's voices only, have much power, on the contrary; and the more, because the voices are deeper and less divided. . . The division of the basses into firsts and seconds (to avoid the high notes) is less necessary in rude and fierce accents, to which sounds forced and exceptional — like the high F and F♯ — agree better from their peculiar character than the more natural sounds of the tenors upon the same notes. But it is necessary to lead to these notes, and to bring them in dexterously, taking care not to make them pass abruptly from the medium, or depth, to the extreme upper register.

When the tenors are compelled by the exigence of a melodial design to descend too low, the first basses are there to serve them as auxiliaries, and to strengthen them without perverting their vocal character by a difference of quality in tone too marked. It would not be the same, if the composer were to give the tenors — or still less, the basses — as auxiliaries to the contraltos and second sopranos: the female voice would then be almost ecilpsed; and, from the moment of the male voice's entrance, its character of vocal sonorousness would change abruptly, so as to break the unity of execution in the melody.

It will easily be conceived that the composer has to make his choice of the register of voices subservient to the character of the piece in which he employs them. He should use only notes of the medium in an Andante with soft and sustained sounds.

Fine effects are nevertheless to be obtained from the extreme low notes of the second basses such as the E♭, and even the D below the stave, when they are preceded by sufficient time for breath, and when they are written upon a sonorous syllable. Brilliant, pompous, or violent choruses should, on the contrary, be written rather higher; without, however, letting the prevalence of high notes be too constant, and without giving the singers many words to pronounce rapidly.

We have not yet spoken of those very high notes of the voice called *head notes* or *falsetto*. They are of great beauty in tenor singers, whose compass they considerably augment. Head notes are of good effect for basses and baritones only in an extremely light style of music, such as that of our French comic operas; these high and feminine-toned sounds, so dissimilar from the *natural notes* — called *chest notes* — of the low voices, have, in fact, something revolting, everywhere but in buffo music.

For the effective employment of very low notes of

bass-singers, they should never be given successions of notes too rapid, or too much overcharged with words. In another point of view, also, choral vocalizations in the lowest part of the scale are of detestable effect. It is but fair to add, that they are not much better in the medium; and that notwithstanding the example set by the majority of the great masters, those ridiculous roulades on the words "Kyrie eleison," or on the word "Amen," which would suffice to render vocal fugues in church music an indecent, abominable buffoonery, will be, it is to be hoped, banished in future from every sacred composition worthy of the name. Slow and soft vocalizations of solo soprano, accompanying a melody of the other voices placed beneath, are, on the contrary, of a pious and angelic expression. It should not be forgotten, to intersperse them with short rests, to afford breathing-time for the chorus-singers.

These modes of utterance which produce from men voice-sounds called *mixed*, and *veiled*, are extremely valuable, and give much character to both solo-singing and choral-singing.

The art of writing for single voices is really swayed by a thousand circumstances, very difficult to determine, but which it is necessary to take into account, and which vary with the individual organization belonging to each singer.

A tenor solo — of all the voices — is the most difficult to write, on account of its three registers, comprising the chest notes, the mixed notes, and the head notes, of which the extent and the facility, — as I have already said, — are not the same in all singers.

The first soprano voice is rather less difficult to treat than the first tenor; its head notes are scarcely different from the rest of the voice. Still, it is well to know the singer for whom one writes. Mezzo soprano (second sopranos) and contralto voices, are generally more homogeneous, more equal, and consequently more easy to employ. Nevertheless, care should be taken, for both of them, not to place many words on those phrases occurring high; the articulation of syllables then becoming very difficult, and sometimes impossible.

The most convenient voice, is evidently the bass, on account of its simplicity. Head notes, being banished from its list, there need be no anxiety as to the changes of its quality; and the choice of syllables becomes also — on this very account — less important. Every singer with a true bass voice, ought to be able to sing all reasonably written music, from the low G to the E♭ above the stave. Baritones are often almost always within a single octave (from the middle E♭ to the E♭ above), which places the composer in the predicament of being unable to avoid an awkward monotony.

The excellence or mediocrity of vocal execution in choral bodies, or in solo-singers, depend not only on the art with which the registers of the voices are chosen, on that with which means are contrived for them to take breath, or on the words given them to sing, but also very much on the manner in which composers dispose their accompaniments. Some overwhelm the voices; others, without burdening the orchestra beyond measure, take delight in displaying some particular instrument. We do not mean that simplicity of accompaniment should be carried to such excess as to preclude orchestral design.

A single instrument playing in the orchestra some well-designed phrase like a vocal melody, and forming with it a sort of duet, is also very often of excellent effect.

It is seldom good likewise to double in the octave or unison the vocal part of an instrument, particularly in an *Andante*.

In choruses, or in grand tutti pieces, it is sometimes the fashion to form a sort of vocal orchestra; one portion of the assembled body then assumes the shape of instrumental style, to execute beneath the song, accompaniments measured and designed in various manners. It almost always produces charming effects.

Here occurs a good opportunity to point out to composers, that in choruses accompanied by instruments, the harmony of the voices should be correct, and treated as if they were alone. The various qualities of tone of the orchestra are too dissimilar from the vocal qualities, to fulfil towards them the office of a bass harmony, without which certain successions of chords become defective.

The system of choruses of men's voices in unison, introduced into dramatic music by the modern Italian school, gives occasionally some fine results.

Double choruses are, on the contrary, of a richness and pomp quite remarkable.

Instruments of Percussion.

They are of two kinds: the first comprises instruments of decided sound, and musically appreciable; and the second those of which the less musical sound can be ranked only among noises destined to produce special effects, or to the *colorisation* of the rhythm.

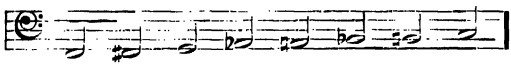
Kettle-drums, bells, the glockenspiel, the keyed harmonica, small ancient cymbals, have decided sounds.

The long drum, the side-drum, the drum, the tambour basque (or tambourine), the common cymbals, the tam-tam, the triangle the pavillon chinois, are in a contrary case, and merely make noises variously characterised.

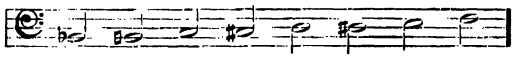
KETTLE-DRUMS.

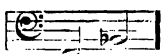
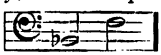
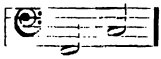
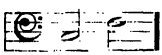
Of all instruments of percussion, kettle-drums appear to me to be the most valuable.

The compass of kettle-drums is one octave, from  to  ; that is to say, by means of the screws which compress the circumference of each kettle-drum, and which augment or diminish the tension of the parchment, the low kettle-drum can be tuned in the following keys:—

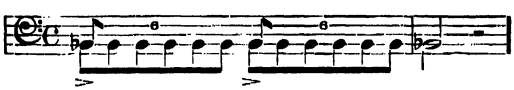


and the high kettle-drum in these:—



Tuning in fourth,  will be dull, the parchment of the two kettle-drums being then very little strained; the F, particularly, will be vapid and of bad quality. Tuning in fifth,  becomes sonorous from the opposite reason. It is the same with kettle-drums in *F♯*, which may be tuned in two ways; in fifth,  or in fourth,  Kettle-drums are now tuned in all sorts of ways,— in minor third or major, in second, in fourth true or augmented, in fifth, in sixth, in seventh, and in octave.

It is sometimes well to designate the notes that the drummer should play *with two drumsticks at once*, or with a *single drumstick*.



The nature of the rhythm, and the place of the loud accents should decide the choice.

The sound of kettle-drums is not very low; it is played as it is written on the F clef, in unison with the corresponding notes on the violoncellos, consequently, and not an octave below, as some musicians have supposed.

BELLS.

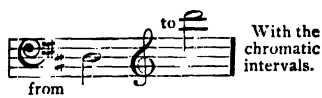
They have been introduced into instrumentation for the production of effects more dramatic than musical. The quality of low bells is appropriate only to solemn or pathetic scenes: that of high bells, on the contrary, gives rise to more serene impressions: they have something rustic and simple about them, which renders them particularly suitable to religious scenes of rural life.

SETS OF BELLS.

Especially in military music, felicitious effects are obtained from a series of very small bells (similiar in quality to chimney-clocks) fixed one above another on a frame of iron, to the number of eight or ten, and ranged diatonically in the order of their size: the highest note naturally comes at the summit of the pyramid, and the deeper ones lowest. These kind of chimes, made to vibrate by a little hammer, can execute melodies of measured rapidity, and of small extant of compass. They are made in different scales. The highest are the best.

THE GLOCKENSPIEL.

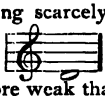
Mozart has written, in his opera of the *Magic Flute*, an important part for a keyed instrument that he calls Glockenspeil (set of bells), composed doubtless of a great number of very small bells, arranged in such a manner as to be put in vibration by a mechanism of keys. He gave it the following compass; and wrote it upon two lines and two clefs, like the pianoforte:—



When they got up at the Paris opera the imperfect Pasticcio, in which was introduced a portion of the music in the *Magic Flute*, they had made, for the glockenspeil piece, a little instrument, the hammers of which, instead of striking on bells, struck upon bars of steel. The sound is produced an octave above the written notes; it is sweet, mysterious, and of extreme delicacy. It adapts itself to the most rapid movements; and is imcomparably better than that of little bells.

THE KEYED HARMONICA.

Is an instrument of the same kind as the preceding; the hammers striking upon plates of glass. Its quality of tone is of an imcomparably voluptuous delicacy. Like that of the key-board of steel bars I have just mentioned, its sonorousness is extremely weak; which should be kept in mind when associating it with other instruments of the orchestra. The least loud accent of the violins alone, would suffice to cover it entirely. It would blend better with light accompaniments of *pizzicato*, or harmonics; and with some very soft middle notes of the flutes.

The sound of the keyed Harmonica comes out as it is written. It can hardly be given more than two octaves; all the notes beyond the high E,  being scarcely perceptible, and those beyond the low D,  having but a very poor tone, and still more weak than the rest of the scale. It is written, like the preceding, on two lines and two G clefs.

It is needless to add, that the mechanism of execution on these two little key-boards is exactly the same as that of the pianoforte; and that all the passages, arpeggios, and chords may be written for them, in their respective compass, which would be written for a very small pianoforte.

ANCIENT CYMBALS.

They are very small; and their sound becomes higher, in proportion as they are thicker and less in size. I have seen some no larger than a dollar. The sound of those is so high and so weak, that it could hardly be distinguished without a complete silence of the other instruments. These cymbals served, in ancient times, to mark the rhythm of certain dances,—like our modern *castanets*, doubtless.

THE LONG DRUM.

Among the instruments of percussion, with an indefinite sound, assuredly the long drum is the one which has caused the greatest amount of nonsense and barbarism, in modern music.

The long drum has an admirable effect, when judiciously employed. It should, for example, be introduced in a full piece, in the midst of a large orchestra, merely to redouble little by little the force of a lofty rhythm already established, and gradually reinforced by the successive entrance of groups of the most sonorous instruments. Its introduction then does wonders; the *swing* of the orchestra is reduced to measured potency; the noise thus disciplined is transformed into music. The *pianissimo* notes of the long drum, united with the cymbals in an andante and struck at long intervals, have something very grand and solemn about them. The *pianissimo* of the long drum *alone*, is, on the contrary, gloomy and menacing (if the instrument be well made, and of large size); it resembles a distant sound of cannon.

CYMBALS.

Cymbals are very often united with the long drum; but, as I have just said, they may be treated isolatedly with the greatest success on numerous occasions. Their quivering and shrill sounds—the noise of which predominates over all the other noises of the orchestra,—ally themselves imcomparably well, in certain cases, either with sentiments of extreme ferocity (then united to sharp whistling of picolo flutes, and to the strokes of the kettle-drum or small drum), or with the feverish excitement of a bacchanalian orgy, where revelry verges upon frenzy.

A vigorous and well-marked rhythm gains greatly in an immense chorus, or in the dance-tune of an orgy, if executed, not by a single pair of cymbals, but by four, six, ten pairs, and even more, according to the space, and to the mass of other instruments and voices. The composer should always be careful to determine the length that he wishes his cymbal notes to last, followed by a rest; in case he wish to have the sound prolonged, he must write long and sustained notes, with this indication:—"let them vibrate;" but in the contrary case, he must place a quaver or a semiquaver, with these words:—"damp the sound." Sometimes, a drumstick with a sponge end, or of a long drum, is used, with which to strike a cymbal suspended by its leather strap. This produces a metalic quiver of tolerable length; sinister, though without the formidable accent of a stroke of the gong.

THE GONG.

The gong, or tam-tam, is employed only in funereal compositions, and dramatic scenes, where horror is carried to its height. The vibrations of the gong, mingled *forte* with the thrilling chords of the brass instruments (trumpets and trombones), make the hearer shudder; its pianissimo strokes, nearly by

themselves, are no less fearful from their lugubrious sound. M. Meyerbeer has proved this in his magnificent scene of *Robert le Diable.*

TAMBOUR BASQUE (OR TAMBOURINE).

This favorite instrument of the Italian peasantry, and which figures in all their festivities, is of excellent effect, employed in masses, to strike like cymbals, and with them, a rhythm in a scene of dance or orgy. It is seldom introduced *alone* in the orchestra; unless in a case where the subject of the piece renders it illustrative of the manners of the people. It produces three kinds of very different noises; when it is simply struck with the hand, its sound has not much effect (unless employed in numbers); and the tambourine thus struck is not distinguishable unless left nearly alone by the other instruments: if it be played by rubbing its parchment with the ends of the fingers, there results a roll in which the noise of the small bells attached round its edge are to be chiefly heard; and which is thus written  ; but this roll should be very short, because the finger which rubs the parchment of the instrument, soon attains, as it advances, the edge, which puts an end to its action.

By rubbing, on the contrary, the parchment, without quitting it, with the whole weight of the thumb, the instrument gives out a wild rumbling — sufficiently grotesque and ugly.

THE DRUM.

Drums, properly so called — called also "caisses claires" — are rarely well placed otherwise than in large orchestras of wind instruments. Their effect is the better and the nobler, in proportion as they are more numerous; eight, ten, twelve, or more drums, executing in a military march rhythmical accompaniments, or *crescendo* rolls, prove magnificent and powerful auxilliaries to the wind instruments. Simple rhythms, without either melody, harmony, key, or anything that really constitutes music, solely serving to mark the march-step of soldiers, become attractive, when performed by a body of forty or fifty drums alone.

Drum are used *muffled*, like kettle-drums; but, instead of covering the parchment with a piece of cloth, the players often content themselves with loosening the braces of the drum, or with passing a leather strap between them and the lower parchment, in such a way as to check the vibrations. The drums then acquire a dim dull sound, somewhat analogous to that produced by muffling the upper parchment; and which renders them fit only for compositions of a funereal or terrible character.

THE CAISSE ROULANTE, OR SIDE-DRUM.

The *side-drum* is only a drum rather longer than the preceding one; and of which the body is in wood instead of being in brass. Its sound is dull, and tolerably like that of the drums *without tone* or *muffled.* It produces a sufficiently good effect in military music; and its subdued rolls serve as a kind of back-ground to those of the drum.

THE TRIANGLE.

Since at the present time there is made so deplorable an abuse of this instrument — as of the long drum, cymbals, kettle-drums, trombones, and in short of all that thunders, sounds, and resounds — it is still more difficult to find fit occasion for introducing it into the orchestra than even the others; its metallic noise suits only pieces of an extremely brilliant character when *forte*, or of a certain wild whimsicality when *piano.*

NEW INSTRUMENTS.

SAXOPHONES.

These new voices given to the orchestra, possess most rare and precious qualities. Soft and penetrating in the higher part, full and rich in the lower part, their medium has something profoundly expressive. It is, in short, a quality of tone *sui generis*, presenting vague analogies with the sound of the violoncello, of the clarinet and corno inglese, and invested with a brazen tinge which imparts a quite peculiar accent. The body of the instrument is a parabolic cone of brass, provided with a set of keys. Agile, — fitted for the execution of passages of a certain rapidity, almost as much as for cantilena passages, — saxophones may figure with great advantage in all kinds of music; but especially in slow and soft pieces.

The quality of tone of the high notes of low saxophones, partakes something of painful and sorrowful while that of their bass notes, is, on the contrary, of a calm grandeur.

All of them, — the baritone, and the bass, principally — possess the faculty of swelling and diminishing their sound; whence results, — in the lower extremity of their scale, — effects hitherto unheard

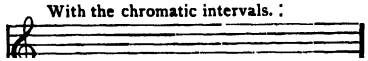
and quite peculiar to themselves, at the same time bearing some resemblance to those of the expressive organ. The quality of tone of the high saxophone is much more penetrating than that of clarinets in *B♭* and in *C*, without having the piercing and often shrill brilliancy of the small clarinet in *E♭*. As much may be said of the soprano. This instrument is played with great facility; its fingering proceeding from the fingering of the flute, and from that of the hautboy. Clarinet-players, already familiar with the mouthing, render themselves masters of its mechanism in a very short time.

Saxophones are six in number:—the high, the soprano, the alto, the tenor, the baritone, and the bass saxophone.

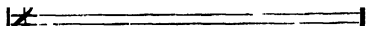
The compass of each of them is nearly the same; and here is their scale, written for all on the G clef, like that of clarinets, after the system proposed by M. Sax, and already adopted by composers:—

With the chromatic intervals.

High Saxophone in E♭.



Real sounds.



With the chromatic intervals.

Soprano Saxophone in C, or in B♭.

Real sounds of the Saxophone in B♭.

With the chromatic intervals.

Alto Saxophone in F, or in E♭.

Effect of the Saxophone in F. That in the key of E♭ is a note lower.

With the chromatic intervals.

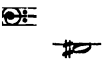
Tenor Saxophone in C, or in B♭.

Effect of the Tenor Saxophone in C. That in the Key of B♭ is a note lower.

With the chromatic intervals.

Baritone Saxophone in F, or in E♭.

Effect of the Baritone Saxophone in F. That in the key of E♭ is a note lower.



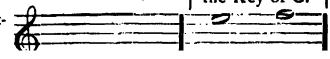
Major and minor shakes are practicable on almost all the extent of the chromatic scale of the saxophone.

SAX-HORN.

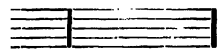
Their sound is round, pure, full, equal, resounding, and of a perfect homogeneousness throughout all the extent of the scale. The changing keys of the sax-horn proceed, like those of the cornet à pistons, by descending; commencing from the typical instrument, the *small very high sax-horn in C*, which is at an octave above the cornet in *C*. The custom has obtained in France of writing all these instruments,—as well as saxotrombas and sax-tubas, the lowest and the highest—on the G clef, as horns are written, with this difference only, that if, for the horn in low *C*, we have to represent the real sound an octave below the note written on the G clef, we must—for certain very low instruments of Sax—represent it two octaves below.

Chromatically to Very difficult in the Key of C.

Small very high Sax-horn in C, or in B♭.

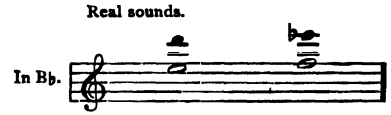


Effect of the small very high Saxhorn in C. That in the key of B♭ is a note lower.

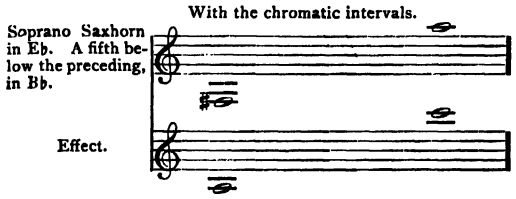


The extreme lower notes are of rather a bad quality of tone, and this instrument should rarely be employed beneath the low A. But there is nothing more brilliant, more neat, more devoid of shrillness—notwithstanding their vivid appeal—than all the notes of the latter octave. This quality of tone is besides so clear and so penetrating, that it allows a single very high sax-horn to be distinguished through a considerable mass of other wind instruments. The very high sax-horn in *B♭* is more used than the one in *C*; and although it is a note lower than the other, there is already much difficulty—or at least much

care — for the performer to bring out the two last sounds :—

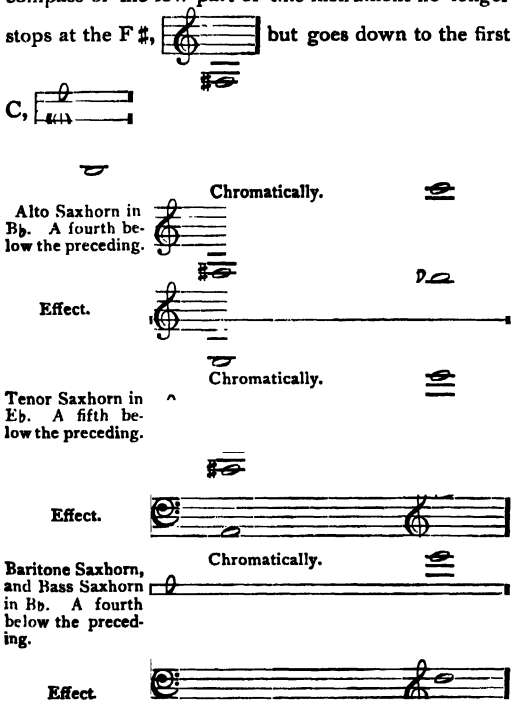


It requires, therefore, to be very sparing of these precious notes, and to introduce them with skill.

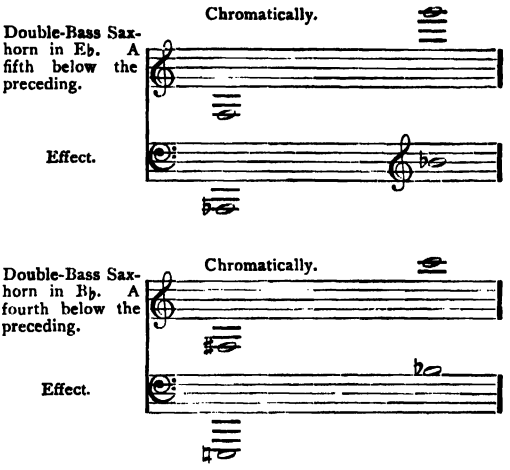


Commencing with the soprano sax-horn in *E♭*, we can no longer indicate the first low note of the tube's resonance. It is too bad to be employed.

We will merely forewarn composers that, if they indicate an instrument *with four cylinders*, the chromatic compass of the low part of this instrument no longer stops at the F ♯, but goes down to the first C,



These two sax-horns,— the baritone and bass,— have the same compass in the high part of the instrument. The tube is only rather smaller for the baritone. The bass, which has almost always four cylinders, has a tube somewhat wider, which allows of its descending lower and more easily.



These are, moreover, the low double bass sax-horn in *E♭*, and the drone sax-horn in *B♭*, which are at an octave below the two preceding; but of which only the medium notes should be employed in a moderate movement.

THE ORCHESTRA.

The orchestra may be considered as a large instrument capable of uttering at once or successively a multitude of sounds of different kinds; and of which the power is mediocre or colossal, according as it comprises the whole or a part only of those executive means belonging to modern music, and according as those means are well or ill chosen and placed in acoustic conditions more or less favorable.

It may be demonstrated easily, and in a method almost exact, the art of *making orchestras* fit to render faithfully compositions of all shapes and dimensions.

Theatrical orchestras and concert orchestras should be distinguished the one from the other. The former in certain respects, are generally inferior to the latter

All well-organized concert orchestras should be arranged in steps. If it have been erected in a theatre, the stage should be completely closed in at the back, at the sides both right and left, and above.

Owing to the construction of our theatres, the instrumentalists are deprived of the majority of the advantages resulting from the arrangement I have just indicated for a concert ochestra. The difference is such, that composers are almost compelled to bear this in mind, and not to instrument their dramatic scores quite in the same way, as symphonies, masses, or oratories, intended for concert-rooms or churches.

For Beethoven's symphonies, Weber's overtures, and modern compositions conceived in the grand and impassioned style, there needs, on the contrary, the mass of violins, violas, and basses.

PART III.

The Orchestral Conductor.

THEORY OF THE ART.

The orchestral conductor should *see* and *hear;* he should be *active* and *vigorous*, should know the *composition*, the *nature* and *compass* of the instruments, should be able to *read* the score, and possess,—besides especial talent—other almost indefinable gifts, without which an invisible link cannot establish itself between him and those he directs; the faculty of transmitting to them his feeling is denied him, and thence, power, empire, and guiding influence completely fail him. It is then no longer a conductor, a director, but a simple beater of time,—supposing he knows how to beat it, and divide it, regularly.

They should feel that he feels, comprehends, and is moved; then his feeling, his emotion communicate themselves to those whom he directs, his inward fire warms them, his electric glow electrifies them, his force of impulse excites them. If he be inert and frozen, on the contrary, he paralyzes all about him.

His task is a complicated one. He has not only to conduct, in the spirit of the author's intentions, a work with which the performers have already become acquainted, but he has also to give them this acquaintance, when a work is in question that is new to them. He has to criticise the errors and defects of each, during the rehearsals, and to organize the resources at his disposal in such a way as to derive the best use he can of them, with the utmost promptitude.

Let us now examine what forms the *mechanical* part of this art.

The talent of *beater of the time*, without demanding very high musical attainments, is nevertheless sufficiently difficult to obtain; and very few persons really possess it. The signs that the conductor should make,—although generally very simple—nevertheless become complicated under certain circumstances, by the division and even the subdivision of the time of the bar.

The conductor, above all, is bound to possess a clear idea of the principal points and character of the work; in order that he may, without hesitation or mistake, at once determine the time of each movement. If he have not the opportunity of receiving his instructions, or if the *times* have not been transmitted to him by tradition, he must have recourse to the indications of the metronome, and study them well; I do not mean by this to say that it is necessary to imitate mathematical regularity of the metronome; all music so performed would become of freezing stiffness, and I even doubt whether it would be possible to observe so flat a uniformity during a certain number of bars. But the metronome is none the less excellent to consult, in order to know the original time, and its chief alterations.

If the conductor possess neither the author's instructions, tradition, nor metronome, indications,—which frequently happens in the ancient masterpieces,—he has no other guide than the vague terms employed to designate the time to be taken, and his own instinct. We are compelled to admit, that these guides are too often insufficient and delusive. Of course no one can be at loss to distinguish a Largo from a Presto. If the Presto be two in a bar, a tolerably sagacious conductor, from inspection of the passages and melodial designs contained in the piece, will be able to trace the degree of quickness intended by the author. But if the Largo be four in a bar, of simple melodial structure,

and containing but few notes in each bar, what means would the hapless conductor have of discovering the true time? And in how many ways might he not be deceived! The different degrees of slowness that might be assigned to the performance of such a Largo are very numerous; the individual feeling of the orchestral conductor must thence become the sole authority.

I will now suppose the conductor to be perfectly well acquainted with the times of the different movements in the work of which he is about to conduct the performance or rehearsals; he wishes to impart to the musicians acting under his orders, the rhythmical feeling within him, to decide the duration of each bar, and to cause the uniform observance of this duration by all the performers. Now this decision and this uniformity can only be established in the more or less numerous assemblage of band, and chorus, by means of certain signs made by their conductor.

These signs indicate the principal divisions, the accents of the bar, and, in many cases, the subdivisions, and the half accents.

The orchestral conductor generally uses a small light stick, of about a foot in length, and rather whitish than of a dark colour (it is seen better), which he holds in his right hand, and to make clearly distinct his mode of marking the commencement, the interior division, and the close of each bar.

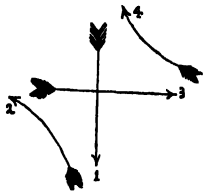
The simplest of all times,—two in a bar,—is likewise beaten simply.

The arm and the stick of the conductor being raised, so that his hand is on a level with his head, he marks the first beat, by dropping the point of his stick perpendicularly from up to down (*by the bending of his wrist*, as much as possible; and not by lowering the whole arm), and the second beat by raising perpendicularly the stick by a contrary gesture.

The time — one in a bar — being in reality, and particularly for the conductor, but the time of two in a bar extremely rapid, should be beaten like the preceding. As the conductor is obliged to raise the point of his stick, after having lowered it, moreover necessarily divides this into two portions.

In the time — four in a bar — the first gesture, from up to down, is universally adopted for marking the first accented part, the commencement of the bar.

The second movement made by the conducting-stick, from right to left, rising, indicates the second beat (first unaccented part). A third, transversely, from left to right, indicates the third beat (second accented part); and a fourth, obliquely, from down to up, indicates the fourth beat (second unaccented part). The combination of these four gestures may be figured thus:—



It is of importance that the conductor, in delivering thus his different directions, should not move his arm much; and consequently, not allow his stick to pass over much space; for each of these gestures should operate nearly instantaneously; or at least, take but so slight a movement as to be imperceptable. If this movement becomes perceptible, on the contrary, multiplied by the number of times that this gesture is repeated, it ends by throwing the conductor behindhand in the time he is beating, and by giving to his conducting a tardiness that proves injurious. This defect, moreover, has the result of needlessly fatiguing the conductor, and of producing exaggerated evolutions, verging on the ridiculous, which attract the spectators' attention, and become very disagreeble to witness.*

In the time, three in a bar, the first gesture made from up to down, is likewise universally adopted, for marking the first beat; but there are two ways of marking the second. The majority of orchestral con ductors indicate it by a gesture from left to right.

Some German Kapel-meisters do the contrary; and carry the stick from right to left.

This way has the disadvantage,— when the conductor turns his back to the orchestra, as takes place in theatres,— of permitting only a small number of musicians to perceive the very important indication of the second beat; the body of the conductor then hiding the movement of his arm. The other method of proceeding is preferable; since the conductor stretches his arm *outwards*, withdrawing it from his chest; and his stick, which he takes care to raise slightly above the level of his shoulder, remains perfectly visible to all eyes. When the conductor faces the players, it is immaterial whether he mark the second beat to the right, or to the left.

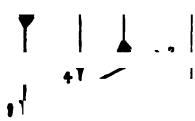
However that may be, the third beat of the time, three in a bar, is always marked like the last of the time, four in a bar; by an oblique movement upwards.

The times,— five and seven in a bar,— would be

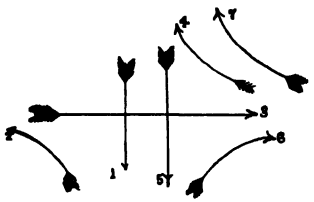
NOTE: The mechanical, almost lifeless movements as here indicated, are but seldom seen in the present time, our modern conductors cultivating the graceful, yet decisive, motions which enable the condutor to better impart to the orchestra his conception and feeling, and to better retain his control. EDITOR.

more comprehensible for the performers, if, instead of indicating them by a particular series of gestures, they were treated as though the one were composed of three and two in a bar, and the other composed of four and three.

Then, these times would be beaten thus:—



Example of seven in a bar:—



These different times, in order to be divided in this way, are assumed to belong to movements of moderate measure. It would not hold good, if their measure were either very quick or very slow.

The time, two in a bar, I have already signified, cannot be beaten otherwise than as we have before seen — whatever its degree of rapidity. But if, as an exception, it should be very slow, the conductor ought to subdivide it.

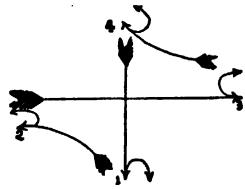
A time, four in a bar, very rapid, on the contrary, should be beaten two in a bar; the four accustomed gestures of a moderate movement becoming then so hurried, as to present nothing decided to the eye, and serving only to confuse the performer instead of giving him confidence. Moreover,—and this is of much more consequence,— the conductor, by making uselessly these four gestures in a quick movement, renders the pace of the rhythm awkward, and loses the freedom of gesture which a simple division of the time into its half would leave him.

It is exactly the same for the time, three in a bar, fast $\frac{3}{4}$, or $\frac{3}{8}$. Then, the gesture of the second beat must be omitted; and, by remaining the period of a beat longer on the first, only raise the stick at the third.

It would be absurd to attempt to beat the three in a bar of one of Beethoven's scherzos.

The contrary is the case for these two times, as for that of two in a bar. If the movement be very slow, each time must be divided; and consequently eight gestures must be made for the time, four in a bar, and six for the time, three in a bar, repeating (and shortening) each of the principle gestures we have before instanced.

Example of four in a bar, very slow:



The arm should remain wholly unaiding to the little supplementary gesture, instanced for the subdivision of the bar; merely the wrist causing the stick to move.

This division of the different times is intended to prevent the rhythmical divergings which might easily take place among the performers, during the interval which separates one beat from the other. For the conductor not indicating anything during this long period (rendered somewhat considerable by the extreme slowness of the movement), the players are then left entirely to themselves, *without conductor;* and as the rhythmical feeling is not the same with all, it follows that some hurry, while others slacken, and unity is soon destroyed. The only exception that could be made to this rule, would be in conducting a first-rate orchestra, composed of performers who are accustomed to play together, and know almost by heart the work they are executing. And even then,— under these circumstances,— the inattention of a single player might occasion an accident.

This being fully understood, it will be seen that subdivision is still more essential for very slow times; as those of $\frac{6}{4}$, $\frac{6}{8}$, $\frac{9}{8}$, $\frac{12}{8}$, etc.

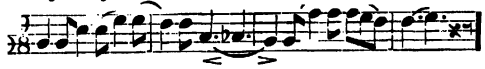
But these times — where the triple rhythm plays so important a part,— may be divided in various ways.

If the movement be brisk or moderate, it will scarcely ever to indicate other than the simple beats of these times, according to the procedure adopted for the analogous simple times.

The times of $\frac{6}{8}$ *allegretto*, and of $\frac{6}{4}$ *allegro*, therefore, are to be beaten like those of two in a bar:— $\frac{2}{2}$ = or 2 = or $\frac{2}{4}$; the time, $\frac{9}{8}$ *allegro*, should be beaten like that of three in a bar:— $\frac{3}{4}$ *moderato*, or like that of $\frac{3}{8}$ *andantino;* and the time, $\frac{12}{8}$ *moderato* or *allegro*, like the time, simple four in a bar. But

if the movement is *adagio*, or, still more, *largo-assai*, *andante-mæstoso*, it should be (according to the form of the melody, or the predominant design) beaten, either all the quavers, or a crotchet followed by a quaver for each beat.

Larghetto grazioso.

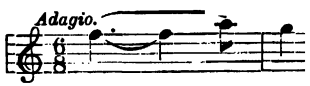


It is unnecessary, in this time, three in a bar, to mark all the quavers; the rhythm of a crotchet followed by a quaver in each beat suffices.

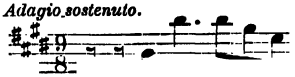
Then, as the subdivision, the little supplementary gesture for simple times, should be made; only, this subdivision will seperate each beat into two unequal portions, since it is requisite to indicate visibly the value of the crotchet, and that of the quaver.

If the movement be still slower, there can be no hesitation; the only way to ensure unity of execution, is to beat all the quavers, whatever be the nature of the written bar:—

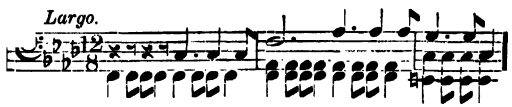
Adagio.



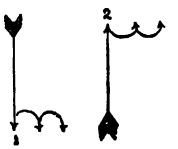
Adagio sostenuto.



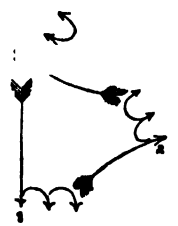
Largo.



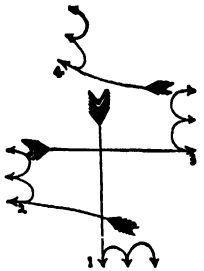
In these three measures, with their indicated kind of movement, the conductor must beat three quavers at a time, three down, and three up, for the time of $\frac{6}{8}$:—



Three down, three to the right, and three up, for the time of $\frac{9}{8}$:—



Three down, three to the left, three to the right, and three up, for the time of $\frac{12}{8}$:—

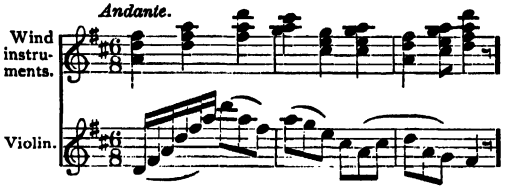


A dilemma sometimes presents itself; it is when in a score, certain parts are given — for the sake of contrast — a triple rhythm, while others preserve the dual rhythm.

Andante.

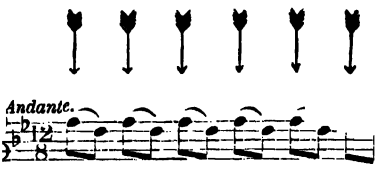
Wind instruments.

Violin.

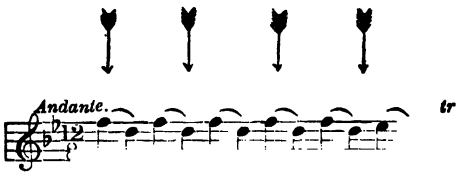


No doubt, if the wind-instrument parts in the above example be confided to players who are good musicians, there will be no need to change the manner of marking the bar, and the conductor may continue to subdivide it by six, or to divide it simply by two; the majority of players, however, in seeming to hesitate at the moment when, by employing the syncopated form, the triple rhythm intervenes amidst the dual rhythm, require assurance, which can be given by this means. The uncertainty occasioned them by the sudden appearance of this unexpected rhythm, and which the rest of the orchestra contradicts, always leads the performers to cast instinctively a glance towards the conductor, as if seeking his assistance. He should also look at them, turning rather towards them, and marking, by very slight gestures, the triple rhythm, as if the time were really three in a bar, in such a way that the violins and other instruments playing in dual rhythm, may not observe this change, which would quite put them out. From this compromise, it results that the new rhythm of three-time being marked furtively by the conductor, is then executed with steadiness; while the two-time rhythm, already firmly established, continues without difficulty, although, no longer indicated by the conductor. On the other hand, nothing, in my opinion, can be more blamable or more contrary to musical good sense, than the application of this procedure to passages where two rhythms of

opposite nature do not co-exist; and where merely syncopations are introduced. The conductor, dividing the bar by *the number of accents he finds contained in it*, then destroys (for all the auditors who see him) the effect of syncopation; and substitute a flat change of time, for a play of rhythm of the most bewitching interest. This is what takes place, if the accents be marked, instead of the beats, in the following passage from Beethoven's Pastoral Symphony:—

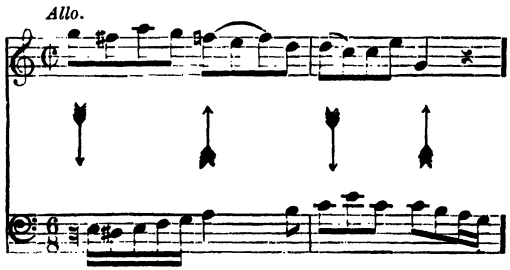


And if the six gestures above indicated be made instead of the four previously maintained, which display and make better felt the syncopation:—

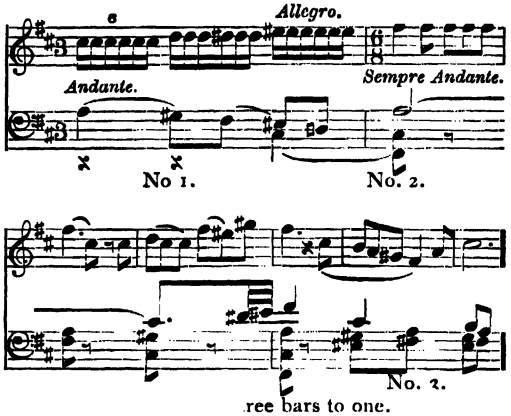


This voluntary submission to rhythmical form *which the author intended to be thwarted*, is one of the gravest faults in style that a beater of the time can commit.

There is another dilemma, extremely troublesome for a conductor; and which demands all his presence of mind. It is that presented by the super-addition of different bars. It is easy to conduct a bar in two dual times placed above or beneath another bar in two triple times, if both be in the same kind of movement; they are then equal in duration, and there needs only to divide them in half, marking the two principal beats:—

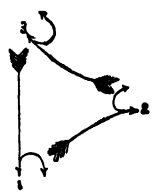


But if, in the middle of a piece slow in movement, there be introduced a new form, brisk in movement, and if the composer (either for the sake of facilitating the execution of the quick movement, or because it was impossible to write otherwise) have adopted for this new movement the short bar which corresponds with it, there may then occur two or even three short bars super-added to a slow bar:—

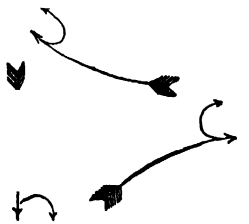


ree bars to one.

The conductor's task is to guide and keep together these different bars of unequal number and dissimilar movement. He attains this, by commencing with dividing the beats in the *andante* bar No. 1, which precedes the entrance of the *allegro* in $\frac{6}{8}$, and by continuing to divide them still; but taking care to mark this division yet more. The players of the *allegro* in $\frac{6}{8}$ then comprehend that the two gestures of the conductor represent the two beats of their short bar, while the players of the *andante* take these same gestures merely for a divided beat of their long bar.



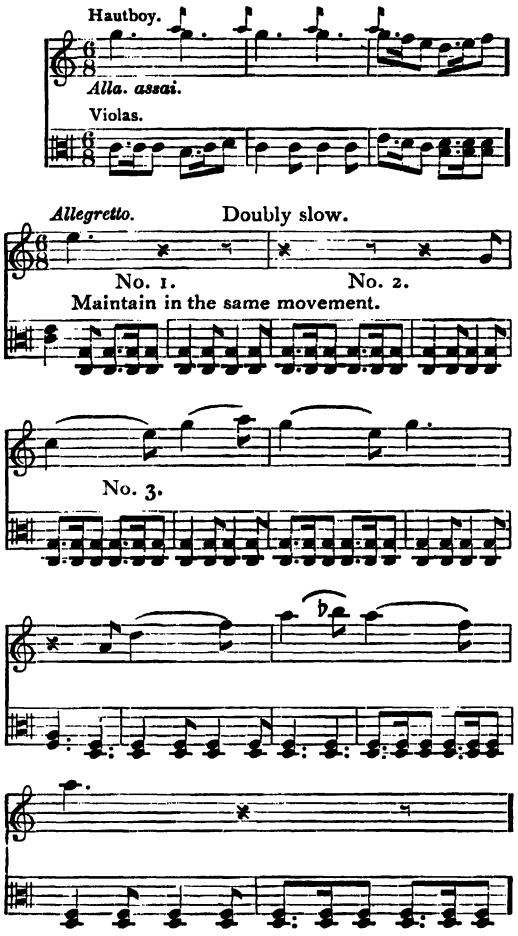
Bar No. 1.



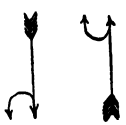
Bars Nos. 2, 3, and so on.

This,—it will be seen,—is quite simple, in fact; because the division of the short bar, and the subdivisions of the long one, mutually correspond. The

following example, where a slow bar is super-added to the short ones, without this correspondence existing, is more awkward :—



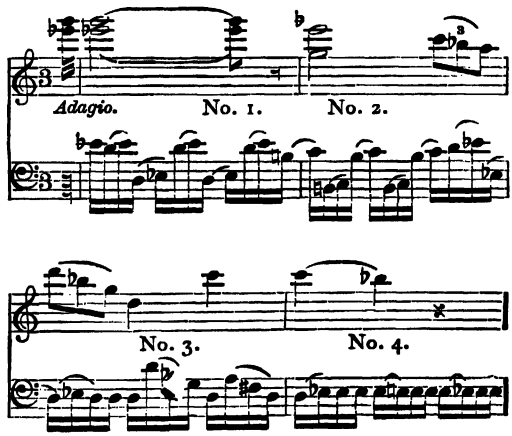
Here the three bars *allegro-assai*, which precede the *allegretto*, are beaten in simple two-time, as usual. At the moment when the *allegretto* begins, the bar of which is double that of the preceding, and of the one maintained by the violas, the conductor marks *two divided beats* for the long bar, by two equal gestures down, and two others up :—



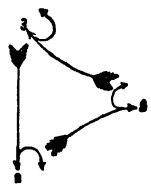
The two large gestures divide the long bar in half, and explain its value to the hautboys, without perplexing the violas, who maintain the brisk movement, on account of the little gesture which also divides in half their short bar.

From bar No. 3, the conductor ceases to divide thus the long bar by four, on account of the triple rhythm of the melody in $\frac{6}{8}$, which this gesture interferes with. He then confines himself to marking the two beats of the long bar; and the violas already launched in their rapid rhythm continue it without difficulty, comprehending exactly that each stroke of the conductor's stick marks merely *the commencement* of their short bar.

And this last observation exhibits with what care should be avoided dividing the beats of a bar, when a portion of the instruments or voices come to execute triplets upon these beats. This division, by cutting in half the second note of the triplet, would render its execution uncertain. It is necessary even to abstain from this division of the beats of a bar into two, just before the moment when the rhythmical or melodial design is about to be divided by three ; in order not to give previously to the players, the impression of a rhythm contrary to that which they are going to hear given :—



In this example, the subdivision of the bar into six, or the division of the beats into two, is useful; and offers no incovenience *during bar No. 1.* The following gesture is then made :



cedes it, with a slight tap of his stick upon the desk. This exceptional circumstance, is the only one which can warrant the employment of an *indicating noise;* and even then, it is to be regretted that recourse must be had to it.

While speaking of chorus-singers, and of their operations in theatres, it may be here observed, that chorus-masters often allow themselves to beat time at the side-scenes, without seeing the conductor's stick, frequently even without hearing the orchestra. The result is, that this time, beaten more or less ill, not corresponding with that of the conductor, inevitably induces a rhythmical discordance between the choral and instrumental bodies, and subverts all unity instead of tending to maintain it.

There is another traditional barbarism, which lies within the province of an intelligent and active conductor to abolish. If a choral or instrumental piece be performed behind the scenes, without accompaniment from the principal orchestra, another conductor is absolutely essential to conduct it. If the orchestra accompany this portion, the first conductor, who hears the distant music, is then strictly bound to *let himself be guided* by the second; and to follow, *by ear*, his time. But if — as frequently happens in modern music — the sound of the chief orchestra hinders the conductor from hearing that which is being performed at a distance from him, the intervention of a special conducting mechanism becomes indispensable, in order to establish instantaneous communication between him and the distant performers. Many attempts, more or less ingenious, have been made of this kind; the result of which has not everywhere answered expectation. That of Covent Garden Theatre, in London, moved by the conductor's foot, acts tolerably well. But the *electric metronome*, put up by Mr. Van Bruge in the Brussels Theatre, leaves nothing to be desired. It consists of an apparatus of copper ribbons, leading from a Voltaic battery placed beneath the stage, being attached to the conductor's desk, and terminating in a movable stick fastened at one end on a pivot before a board, at a certain distance from the orchestral conductor. To this latter's desk is affixed a key of copper, something like the ivory key of a pianoforte; it is elastic, and provided on the interior with a protuberance of about a quater of an inch long. Immediately beneath this protuberance, is a little cup, also of copper, filled with quicksilver. At the instant when the orchestral conductor, desiring to mark any particular beat of his bar, presses with the forefinger of his left hand (his right being occupied in holding, as usual, the conducting-stick) the copper key, this key is lowered, the protuberance passes into the cup filled with quick-silver, a slight electric spark is emitted, and the stick placed at the other extremity of the copper ribbon makes an oscillation before its board. This communication of the fluid, and this movement, are quite simultaneous; whatever the distance be that is traversed.

The performers being grouped behind the scenes, their eyes fixed upon the stick of the electric metronome, are thus directly subjected to the conductor's sway; who could thus — were it needful — conduct from the middle of the Opera orchestra in Paris, a piece of music performed at Versailles.

It is merely requisite to agree beforehand with the chorus-singers, or with their conductor (if, as an additional precaution, they have one), the way in which the orchestral conductor beats the time; whether he mark all the principal beats, or only the first of the bar,— since the oscillations of the stick moved by electricity being always from right to left, they indicate nothing precise in this respect.

I acknowledge, however, that many chorus-masters, or sub-conductors of orchestras, are sometimes of real utility, and even indispensable for the maintenance of unity among very large masses of performers. When these masses are obliged to be so disposed as that one portion of these players or chorus-singers turn their back on the conductor, he needs a certain number of sub-beaters of the time placed before those of the performers who cannot see the chief conductor, and charged with repeating all his signals. In order that this repetition shall be precise, the sub-conductors must be careful never to take their eyes off the chief conductor's stick for a single instant. If, in order to look at their score, they cease for only three bars, to watch him, a discrepancy arises immediately between their time and his; and all is lost.

The more distant the orchestral conductor is from the performers he directs, the more his influence over them is diminished.

The best way would be to have several sub-conductor's, with several electric metronomes beating before their eyes the principal beats of the bar.

And now,— should the orchestral conductor give the time standing, or sitting down?

If in theatres, where they perform scores of immense length, it is very difficult to support the fatigue of remaining on foot the whole evening, it is none the less true that the orchestral coductor, when seated,

loses a portion of his power, and cannot give free course to his animation, if he possess any.

Then, should he conduct, reading from a full score, or from a first violin part (leader's copy), as is customary in some theatres? It is evident that he should have before him a full score. To conduct by means of a part containing only the principal instrumental coming-in points, the bass, and the melody, needlessly demands an effort of memory from the conductor, who has not at hand the full score; and exposes him, moreover, if he happen to tell one of the performers that he is wrong, whose part he cannot examine, to the chance of this latter's replying: "How do you know."

The disposal and grouping of the players and chorus-singers comes also within the province of the conductor; particularly for concerts. It is impossible to indicate arbitrarily the best method of grouping the assemblage of performers in a theatre or concert-room; the shape and the arrangement of the interior of these places, necessarily influences the course to be taken in such a case. Let us add, that they depend, moreover, upon the number of performers requiring to be grouped; and, on some occasions, upon the style of composition adopted by the author whose work is to be performed.

In general, for concerts, the disposal of the orchestra which seems best, is this:—An amphitheatre of eight, or, at least, five rows is indispensable. The semicircular form is the best, for this amphitheatre. If it be large enough to contain the whole orchestra, the entire mass of instrumentalists will be disposed along these rows; the first violins in front, on the right (facing the public); the second violins in front on the left; the violas in the middle, between the two groups of violins; the flutes, hautboys, clarinets, horns, and bassoons behind the first violins; a double rank of violoncellos and double-basses behind the second violins; the trumpets, cornets, trombones, and tubas behind the violas; the rest of the violoncellos and double-basses behind the wooden wind instruments; the harps in the foreground, close to the orchestral conductor; the kettle-drums, and other instruments of percussion behind or in the centre of the brass instruments; the orchestral conductor, turning his back to the public, at the base of the orchestra and near to the foremost desks of the first and second violins.

There should be a horizontal flooring, or stage, more or less wide, extending in front of the first rows of the amphitheatre. On this flooring the chorus-singers should be placed, in form of a fan, turned three-quarters towards the public, so that all shall be able easily to see the motions of the orchestral conductor. The grouping of the chorus-singers in consonance with their respective order of voice, will differ, according as the author has written in three, four, or six parts. At any rate the women — sopranos and contraltos — should be in front, seated; the tenors standing behind the contraltos; and the basses standing behind the sopranos.

The solo-singers should occupy the centre, and foremost part of the front stage; and should always place themselves in such a way as to be able, by slightly turning the head, to see the conducting-stick.

For the rest, I repeat, these indications can be put approximative; they may be, for many reasons, modified in various ways.

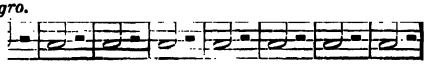
It is everywhere of the greatest consequence that the chorus-singers placed on the front of the stage, shall occupy a plane somewhat lower than that of the violins; otherwise they would considerably deaden the sound of these latter.

For the same reason, if, in front of the orchestra, there are not other rows for the choir, it is absolutely needful that the women should be seated, and the men remain standing up; in order that the voices of the tenors and basses, proceeding from a more elevated point than those of the sopranos and contraltos, may come forth freely, and be neither stifled nor intercepted.

When the presence of the chorus-singers in front of the orchestra is not necessary, the conductor will take care to send them away; since this large number of human bodies injures the sonorousness of the instruments. A symphony, performed by an orchestra thus more or less stifled, loses much of its effect.

There are yet other precautions, relative especially to the orchestra, which the conductor may also take, to avoid certain defects in performance. The instruments of percussion, placed as I have indicated, upon one of the last rows of the orchestra, have a tendency to abate the rhythm, and to slacken the time. A series of strokes on the long drum struck at regular intervals in quick movement like the following:—

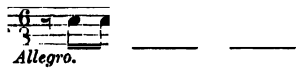
Allegro.



will sometimes produce the complete destruction of a fine rhythmical progression, by checking the onward bound of the rest of the orchestra, and destroying the

unity. Almost always, the long drum player, from want of remarking the original time given by the conductor, remains somewhat behind-hand in striking his first stoke. This retardment, multiplied by the number of strokes which follow the first one, soon produces — as may be imagined — a rhythmical discrepancy of the most fatal effect. The conductor,— all whose efforts are then in vain to re-establish unanimity,— has only one thing left to do; which is, to insist that the long drum player shall count beforehand the number of strokes to be given the passage in question, and that, knowing his part, he shall no longer look into his copy, but keep his eyes constantly fixed upon the conducting-stick; by which means, he will at once follow the time without the slightest want of precision.

Another retardment, arising from a different cause, frequently takes place in the trumpet-parts; it is when they contain a quick flow of passages such as this:—



The trumpet-player, instead of taking breath *before* the first of these three bars, takes breath at their commencement, during the quaver-rest A; and not counting for anything the short time it has taken him to breathe, gives nevertheless its whole value to the quaver-rest, which thus becomes superadded to the value of the first bar. The result of this, is the following effect:—

an effect, the worst, that the final accent, struck at the commencement of the third bar, the rest of the orchestra comes a third of the time too slow in the trumpets; and destroys unity in the striking of the last chord.

To obviate this, the conductor must first previously warn the players of this inexactness, into which they almost all are led to fall unawares; and then, while conducting, must cast a glance towards them at the decisive moment, and *anticipate* a *little*, by beating the first beat of the bar where they come in: it is incredible how difficult it is to prevent trumpet-players from doubling the value of a quaver-rest thus placed.

When a long *accelerando*, *little by little*, is indicated by the composer, for passing from an allegro moderato to a presto, the majority of orchestral conductors hurry the time *by jerks*, instead of quickening it equally throughout, by insensible onward rate.

This should be cautiously avoided. The same remark applies to the converse proposition. It is even still more difficult to slacken smoothly, and without checks, quick time so as to transpose it little by little into a slow time. Often, from a desire to testify zeal, or from defect of delivery in his musical feeling, a conductor demands from his players *an exaggeration of nice gradations*. He comprehends neither the character nor the style of the piece. The gradations then become so many blemishes; the accents, yells; the intentions of the poor composer are totally disfigured and perverted; while those of the orchestral conductor — however politely meant they may be — are none the less injurious: like the caresses of the ass in the fable, who crushed his master when fondling him.

And now let us instance many deplorable abuses that have obtained in almost all the orchestras of Europe; abuses which reduce composers to despair, and which it is the duty of conductors to abolish as soon as possible.

Performers playing stringed instruments, will rarely give themselves the trouble to play a *tremolo*; they substitute for this very characteristic effect, a tame repitition of the note, half, and sometimes three-quarters slower than the one whence results the tremolo: instead of demisemiquavers, they make triple or double ones; and in lieu of producing sixty-four notes in a bar in four-time (adagio), they produce only thirty-two, or even sixteen. The action of the arm necessary for producing a true tremolo, demands, doubtless, too great an effort. This idleness is intolerable.

Many double-bass players permit themselves — from idleness, also, or from a dread of being unable to achieve certain difficulties — to simplify their part. This race of simplifiers, be it said, has existed for years; but it cannot endure any longer. In ancient works, the double-bass parts were extremely simple; therefore there can be no reason to impoverish them still more: those in modern scores are rather more difficult, it is true; but, with very few exceptions, there is nothing in them of impossible execution; composers, masters of their art, write them with care, and as they ought to be executed. If it be from idleness that the simplifiers pervert them, the energetic

orchestral conductor is armed with the necessary authority to compel the fulfilment of their duty. If it be from incapacity, let him dismiss them. It is his best interest to rid himself of instrumentalists who cannot play their instrument.

Flute-players, accustomed to be above the other wind instruments, and not admitting that their part can be written below that of clarinets or haut-boys, frequently transpose entire passages to an octave higher. The conductor, if he do not carefully peruse his score, if he be not thoroughly acquainted with the work he is conducting, or if his ear lack keenness, will not perceive this strange liberty taken by flautists. Nevertheless, multitudes of instances exist; and care should be taken to banish them entirely.

It occurs everywhere (I do not say in some orchestras only) — it occurs everywhere, I repeat, that violinists who have, as is well known, to play ten, fifteen, twenty of them, the same part in unison, do not count their bars' rest; and always from idleness, relying on the others doing it. Whence it follows, that scarcely the half of them come in again at the right moment; while the rest still hold their instrument under their left arm, and look about them: thus the point is greatly weakened, if not entirely missed.

An orchestra,— the instruments of which are not in tune each, and with each other,— is a monstrosity; the conductor, therefore, should take the greatest care that the musicians tune accurately. But this operation should not be performed in the presence of the public; and moreover, every instrumental rumour,— every kind of preluding, between the acts, constitutes a real offence to all civilized auditors. The bad training of an orchestra, and its musical mediocrity, is to be inferred from the impertinent noise it makes during the periods of quiet, at an opera or concert.

It is also imperative for a conductor not to allow clarinet-players to use always the same instrument (the clarinet in $B\flat$), without regard to the author's indications. Just as if the different clarinets — those in D and in A, particularly— had not a special character of their own, of which the intelligent composer knows the exact value; and as if the clarinet in A had not moreover a low semitone more than the clarinet in $B\flat$, — the $C\sharp$ of excellent effect, produced by the E,  which E gives only the D,  on the clarinet in B♭.

A habit, as vicious, and still more pernicious, has crept in since the introduction of horns with cylinders and pistons, in many orchestras; it is that of playing *in open sounds*, by means of the new mechanism adapted to the instrument, those notes intended by the composer to be produced *in closed sounds*, by means of the right hand within the bell. Moreover, the horn-players, now-a-days, on account of the facility afforded by the pistons or cylinders of putting their instrument into different keys, use only the *horn in F*, whatever may be the key indicated by the author.

He should also set his face against the economical fashion adopted by certain theatres — called lyric — of causing the cymbals and the long drum to be played by the same performer. The sound of the cymbals when attached to the long drum,— as they must be to render this economy feasible,— is an ignoble noise, fit only for bands at tea-gardens. This custom moreover, leads mediocre composers into the habit of never employing one of these instruments without the other, and of considering their use as solely confined to the forcible marking of the accented parts of the bar. This is an idea fruitful in noisy platitudes; and one that has brought upon us the ridiculous excesses beneath which, if there be not a stop put to them, dramatic music will sooner or later sink.

I conclude, by expressing sincere regret at beholding choral and orchestral studies still so badly organized. Everywhere, for grand choral and instrumental compositions, the system of rehearsals in the mass, is maintained. They make all the chorus-singers study at once, on the one hand; and all the instrumentalists at once, on the other. Deplorable errors innumerable mistakes, are thus committed,— particularly in the intermediate parts; errors which the chorus-master and the conductor do not perceive. Once established, these errors degenerate into habits; and become part and parcel of the execution.

The hapless chorus-singers, moreover, during their studies, such as they are, are by far the worst treated of all the performers. Instead of giving them *a good conductor* knowing the times of the different movements accurately, and proficient in the art of singing, to beat the time, and make critical observations; *a good pianist*, playing *from a well arranged pianoforte score*, upon *a good piano;* and *a violinist*, to play in unison or in octave with the voices each part learned alone: instead of these three *indispensable artists*, they commit them (in two-thirds of the lyric theatres of Europe) to the superintendance of a single man, who has no more idea of the art of conduct

ing, than of that of singing, generally very little of a musician, who, seated before a battered out-of-tune instrument, tries to decipher a dislocated score which he does not know, strikes false chords, major when they are minor, or vice-versa, and under the pretext of conducting and of accompanying by himself, employs his right hand in setting the chorus-singers wrong in their time, and his left hand in setting them wrongly in tune.

A faithful, well-colored, clever interpretation of a modern work, even when confided to artists of a high order, can only be obtained, I firmly believe, by partial rehearsals. Each part of a chorus should be studied singly, until it be thoroughly known, before admitting it collectively. The same step should be taken with regard to the orchestra, for a symphony at all complicated. The violins should first be practised alone; the violas and basses by themselves; the wooden wind instruments (with a small band of stringed instruments, to fill in the rests, and accustom the wind instruments to the points of re-entrance) the brass instruments the same; and very often it is necessary to practise alone the instruments of percussion; and lastly, the harps, if they be numerous. The studies, in combination, are then far more profitable, and more rapid; and there is then good hope of attaining a fidelity of interpretation, now, alas, but too rare.

The performances obtained by the old method of study, are merely *approaches* to achievement; beneath which so very many master-pieces have succumbed. The superintending conductor, after the butchering of a master, none the less serenely lays down his stick with a satisfied smile; and if some few misgivings remain with him as to the mode in which he has fulfilled his task, should no one venture at the close to dispute its accomplishment, he murmurs aside:—"Bah! væ victis."

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